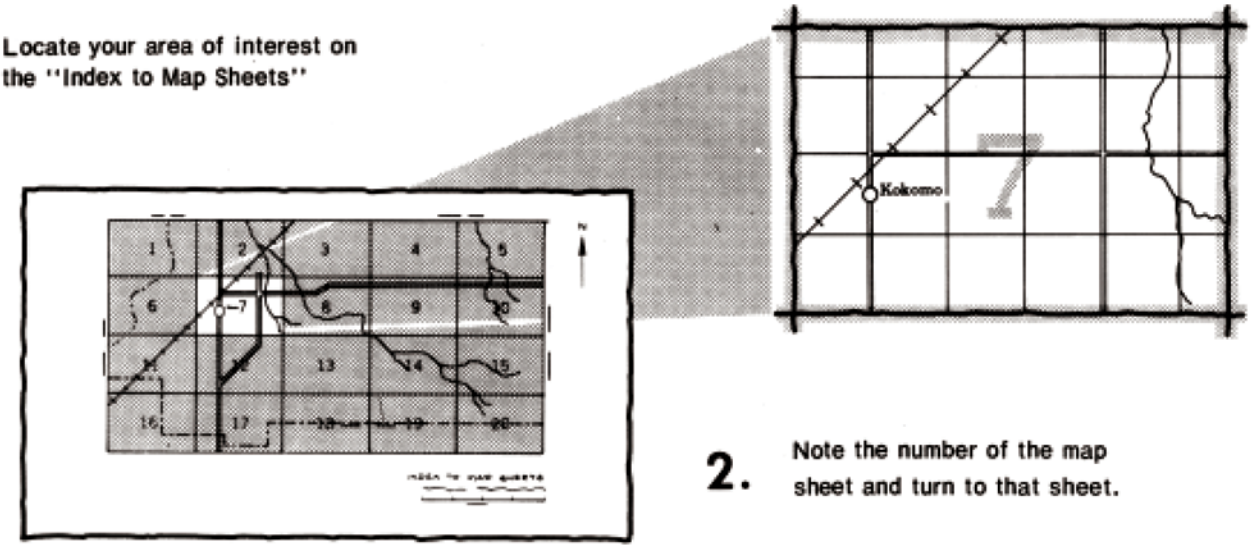
Soil Survey of

Jones County, North Carolina

United States Department of Agriculture, Soil Conservation Service and Forest Service
in cooperation with North Carolina Agricultural Research Service
North Carolina Agricultural Extension Service
North Carolina Department of Natural Resources and Community Development
and Jones County Board of Commissioners

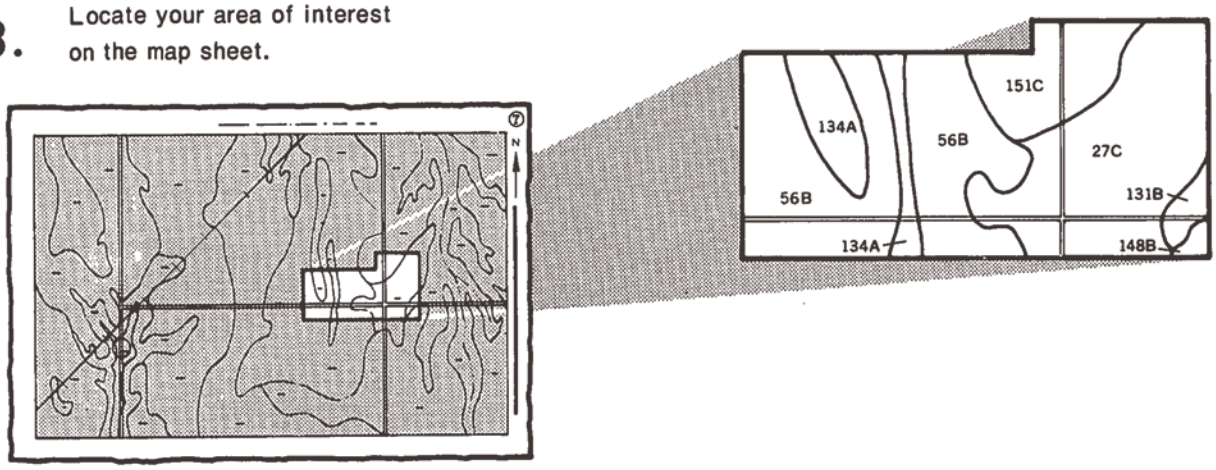
HOW TO USE

1. Locate your area of interest on the "Index to Map Sheets"

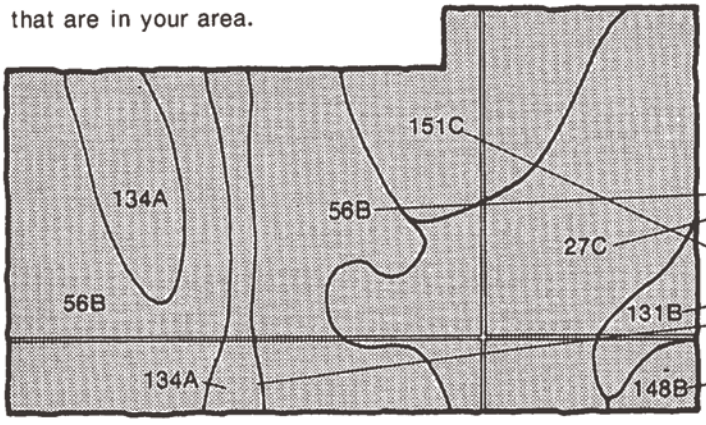


2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



4. List the map unit symbols that are in your area.



Symbols

- 27C
- 56B
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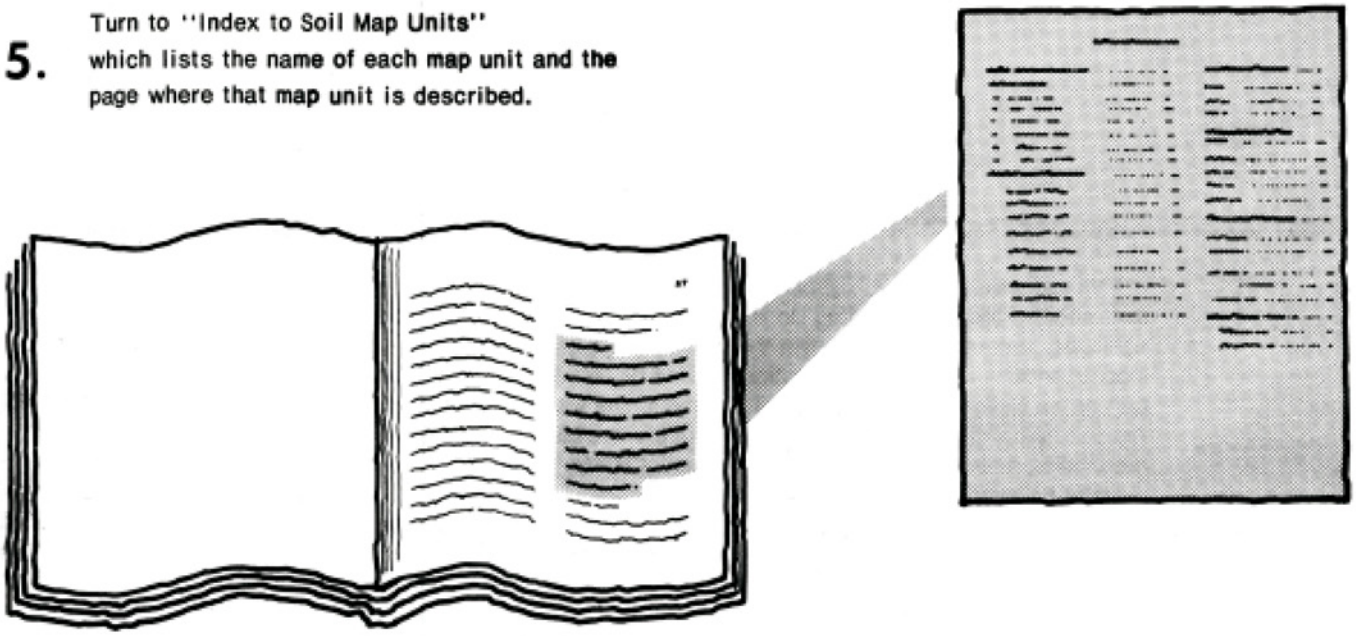
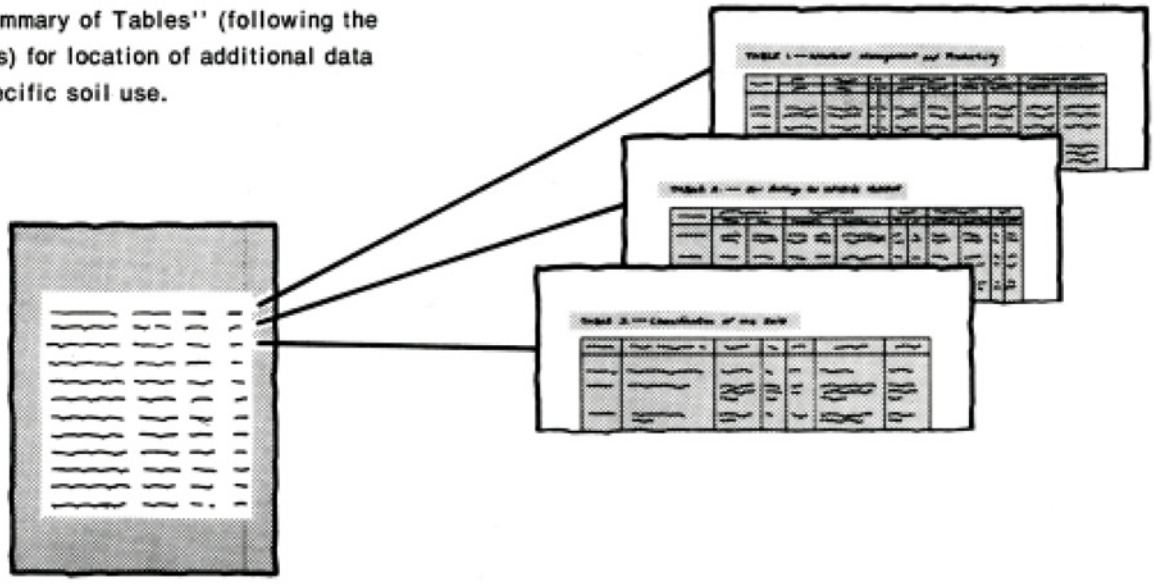
- 151C

THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Research Service, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1975-78. Soil names and descriptions were approved in 1979. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1979.

This survey was made cooperatively by the Soil Conservation Service and Forest Service, the North Carolina Agricultural Research Service, the North Carolina Department of Natural Resources and Community Development, the North Carolina Agricultural Extension Service, and the Jones County Board of Commissioners. It is part of the technical assistance furnished to the Jones County Soil and Water Conservation District.

Cover: Brock's millpond, a historic site in Trenton, North Carolina.

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soil series

Issued November 1981

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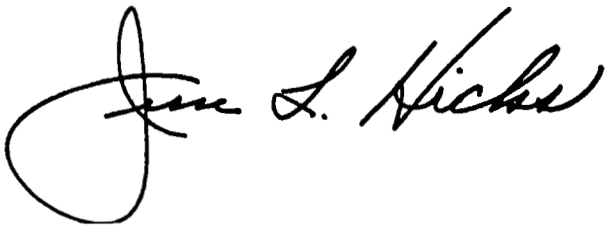
foreword

This soil survey contains information that can be used in land-planning programs in Jones County, North Carolina. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

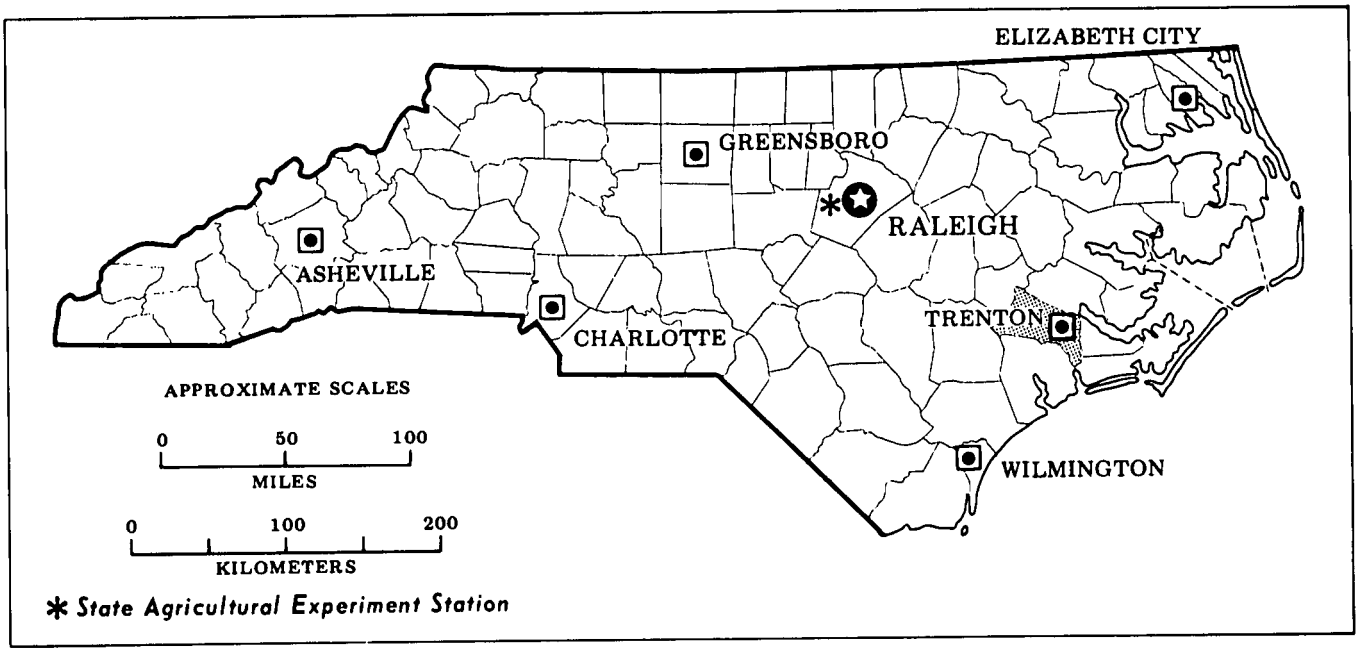
This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to marl. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.



Jesse L. Hicks
State Conservationist
Soil Conservation Service



Location of Jones County in North Carolina.

soil survey of
Jones County, North Carolina

By William L. Barnhill, Soil Conservation Service

Soils surveyed by William L. Barnhill and Johnson C. Jenkins,
Soil Conservation Service
and Vincent Lewis, North Carolina Department of Natural Resources and
Community Development

United States Department of Agriculture,
Soil Conservation Service and Forest Service
in cooperation with North Carolina Agricultural Research Service,
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general nature of the survey area

Jones County is drained by Tracy Swamp and the Trent and White Oak Rivers. The flow is sluggish in the rivers and their tributaries. On uplands near the streams, short side slopes grade from steep to gentle and merge into flat divides. The soils near the drainageways are well drained and moderately well drained. A short distance from the drainageways the soils are somewhat poorly drained, and on the wide flats the soils are poorly drained or very poorly drained.

There are wide undissected divides in the county where surface runoff is slow or very slow. In most of these large interstream areas the underlying material is slowly permeable and internal drainage is slow. Also, rainfall exceeds evapotranspiration by about 15 inches a year. These two factors favor the accumulation of an organic mantle. Generally, because the mineral soil underlying the organic mantle is slightly undulating, the thickness of the organic mantle is uneven. The Croatan National Forest, Hofmann Forest, Great Dover Swamp, and Catfish Lake are on wide divides where the soils are organic.

A small part of Jones County is on the Middle Coastal Plain. The Surry Scarp, which has a toe elevation of about 94 feet, bisects the extreme western part of the county. This scarp separates the Middle Coastal Plain (Sunderland surface) from the Lower Coastal Plain (Wicomico surface). The Walterboro Scarp, which has a toe elevation of 45 feet, separates the Wicomico surface from the Talbot surface to the east. This scarp lies just west of Ten Mile Fork and runs across the county to Trenton and southeast to Oliver Crossroads and south.

Marl is near the surface in the western and northwestern parts of Jones County. It is generally at a depth of 3 to 15 feet, but it outcrops along the banks of the Trent River and its tributaries.

Ground water is plentiful throughout the county. It is near the surface in most places, particularly during the wet seasons. On many farms, excavated ponds less than 15 feet deep supply water for irrigation, livestock, and recreation. Most inactive marl pits and borrow pits contain water. All the water for the county-wide central water system comes from deep wells in the Castle Hayne Formation.

A study of seasonal changes in the water table level in soils that have a clayey subsoil and soils that have a loamy subsoil was made in Jones County.

The Leaf, Lenoir, and Craven soils have a clayey subsoil. Changes in the ground water level in these soils occurred more slowly than in soils that have a loamy subsoil. The ground water level in these soils began to drop late in May and to rise late in August. The water level in the Leaf and Lenoir soils was within 10 inches of the surface for as long as 9 months in 1977-78. The Craven soil had less saturation in all seasons because of a higher amount of surface runoff. (See fig. 1.)

The Rains, Lynchburg, and Grifton soils have a loamy subsoil. Changes in the ground water level in these soils came about more rapidly than in the clayey soils. The ground water level in the Rains and Lynchburg soils began to drop in April, and the ground water level in the Grifton soils began to drop early in June. The water level in the Rains and Lynchburg soils was within 20 inches of the surface for 6 to 8 months beginning early in the fall of 1977. In the Grifton soil, the water level was within 10 inches of the surface for 9 months beginning early in the fall of 1977. In this soil, marl at a relatively shallow depth perches the water at a higher level.

history of development

Jones County was settled in the 18th century by German and Swiss immigrants (*3*). After the Tuscarora War of 1711, many settlers had to push farther up the Trent River to find new land. Most of these migrating settlers built their houses in the backwoods in Craven County. In 1778, a commission was appointed to lay out the boundaries of a new county and to pick a central and convenient place for the seat of the new county. The new county, which had been part of Craven County, was named in honor of Willie Jones, a patriot.

Cotton and corn led agricultural production during the mid-1880's. In the late 1800's the building of two railroads helped boost land values and made lumbering an important industry. Also, during this time cotton production decreased because of the boll weevil. Farmers turned to tobacco as a main crop.

The population of the county increased slowly until 1940. From 1940 to 1950 it increased more rapidly, reaching 11,004 in 1950. In the 1950's the county began to experience a significant outmigration of young people. By 1970 the population of the county had decreased to 9,779, and it is still decreasing. The county has remained agriculturally oriented, but farms are fewer and larger.

climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Jones County is hot and humid in summer. Winter is cool with occasional brief cold spells. Rains occur throughout the year and are fairly heavy. Snowfall is rare. Annual precipitation is adequate for all crops.

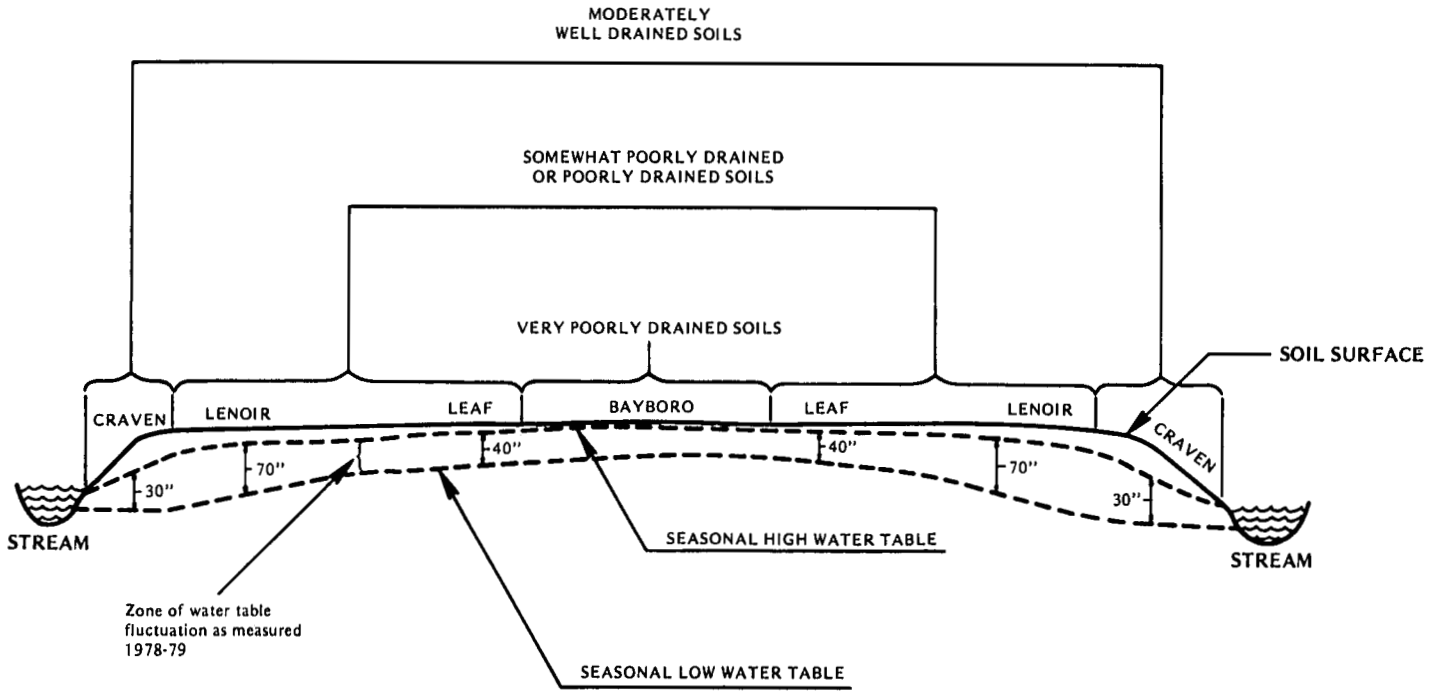

Figure 1.—The relationship of soils and landscape to seasonal high water table in Jones County.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Kinston, North Carolina, in the period 1951 to 1977. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 44° F, and the average daily minimum temperature is 32°. The lowest temperature on record, which occurred at Kinston on February 13, 1953 is 5°. In summer the average temperature is 77°, and the average daily maximum temperature is 88°. The highest recorded temperature, which occurred at Kinston on June 28,1954, is 105°.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50° F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 52 inches. Of this, 31 inches, or 60 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 25 inches. The heaviest 1-day rainfall during the period of record was 7.83 inches at Kinston on August 13, 1955. Thunderstorms occur on about 45 days each year, and most occur in summer.

Average seasonal snowfall is 3 inches. The greatest snow depth at any one time during the period of record was 8 inches. On the average, 1 day has at least 1 inch of snow on the ground.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 10 miles per hour, in spring.

Every few years a hurricane crosses the area.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the kinds and the elevation of sediments. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, date on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

soil descriptions

1. Rains-Goldsboro-Lynchburg

Nearly level, poorly drained to moderately well drained soils that have a loamy or clayey subsoil; on uplands

These soils are mainly in the southeastern, northwestern, and southern parts of the county. Typically, the areas are broad and nearly level and vary in size.

This map unit makes up about 22 percent of the county. About 34 percent of the unit is Rains soils, 18 percent is Goldsboro soils, 14 percent is Lynchburg soils, and 34 percent is soils of minor extent.

Rains soils are poorly drained. They are in the middle of broad interstream areas. They have a fine sandy loam surface layer and a sandy clay loam subsoil.

Goldsboro soils are moderately well drained. They are nearest to the drainageways. They have a surface layer of loamy sand and a subsoil of sandy clay loam or sandy clay in the lower part.

Lynchburg soils are somewhat poorly drained and commonly are between the Rains and Goldsboro soils. They have a fine sandy loam surface layer and a sandy clay loam subsoil.

The minor soils in this unit are the Norfolk, Autryville, and Marvyn soils on the sides of divides, Onslow soils, which are intermingled with the major soils, very poorly drained Pantego and Stockade soils in small depressions, and poorly drained Grifton and Meggett soils also in depressions.

The major soils are used for cultivated crops. In some areas the soils are used as woodland. A seasonal high water table is a limitation to uses other than forestry. Drainage practices that are commonly used in areas of row crops and pasture can overcome this limitation. Some wetness may persist, however, after such practices are applied, and as a result, some of the soils may not be suited to many uses other than forestry.

The major soils, if adequately drained, are suited or well suited to crops and are suited as habitat for openland, woodland, and wetland wildlife. In some places they are suited to urban uses, but in most places they are poorly suited because of the seasonal high water table.

2. Pantego-Torhunta

Nearly level, very poorly drained soils that have a loamy subsoil; on uplands

These soils are in the larger interstream divides on the northern, eastern, and southern areas of the county. Typically, the areas are oblong or circular and irregular in width.

This map unit makes up about 20 percent of the county. About 44 percent of the unit is Pantego soils, 34 percent is Torhunta soils, and 22 percent is soils of minor extent.

The Pantego soils have a loam surface layer and a sandy clay loam subsoil.

The Torhunta soils have a fine sandy loam surface layer and a sandy loam subsoil.

The minor soils are the Croatan, Murville, and Stockade soils in small shallow drainageways, Bayboro soils in shallow depressions, and poorly drained Woodington and Rains soils in scattered areas near shallow drainageways.

Nearly all of the acreage of the soils in this unit is woodland. The areas that are not wooded are in row crops and pasture. A water table near the surface most of the year is a major limitation.

The major soils, if adequately drained, are suited to crops and as habitat for openland, woodland, and wetland wildlife. They are poorly suited to urban uses because of the seasonal high water table.

3. Croatan

Nearly level, very poorly drained organic soils; on uplands

These soils are in the eastern, northwestern, and south-central parts of the county. The largest area is in the south-central part. Typically, the areas are circular, and the mineral material underlying the organic mantle is slightly undulating (fig. 2). All the areas are slightly higher in elevation than the surrounding mineral soils except the northwestern area, which is a large oval depression.

This map unit makes up about 18 percent of the county. About 93 percent of the unit is Croatan soils, and 7 percent is soils of minor extent.

The Croatan soils consist of well decomposed organic matter 28 inches deep. The underlying material is mucky sandy loam, sandy loam, sandy clay loam, and loamy sand.

The minor soils are the Leon and Murville soils on long, narrow, slightly elevated ridges in the middle of the mapped areas; and Pantego, Torhunta, and Bayboro soils near the outer edges of the mapped areas.

This map unit consists mainly of woodland or wildlife management areas. A high water table and the danger of fire in the organic matter after drainage are the major limitations.

The major soil, if drained, is suitable for row crops. It is suited to use as habitat for openland, woodland, and wetland wildlife. It is poorly suited to urban uses because of low strength and a seasonal high water table.

4. Woodington-Stallings-Autryville

Nearly level and gently sloping, poorly drained, somewhat poorly drained, and well drained soils that have a loamy subsoil; on uplands

These soils are dominantly in the western part of the county, and most areas are broad and nearly level. Those near drainageways are undulating and gently sloping.

This unit makes up about 16 percent of the county. About 39 percent of the unit is Woodington soils, 26 percent is Stallings soils, 17 percent is Autryville soils, and 18 percent is soils of minor extent.

Woodington soils are poorly drained. They are in the middle of a broad interstream area. They have a fine sandy loam surface layer and subsoil.

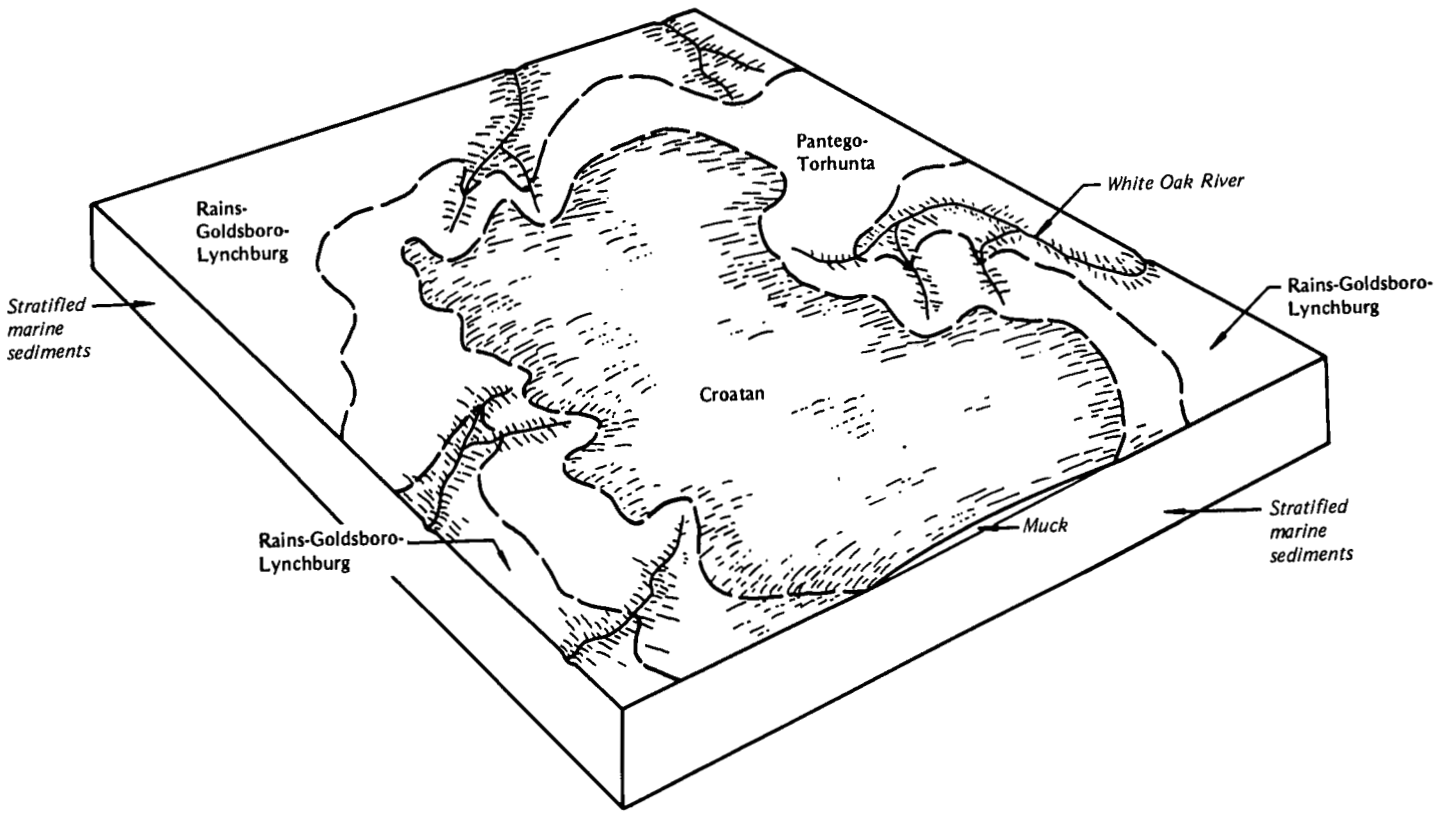

Figure 2.—The distinctive pattern of the Rains-Goldsboro-Lynchburg, Pantego-Torhunta, and Croatan general soil map units. Croatan muck is slightly higher in elevation than the surrounding mineral soils.

Stallings soils are somewhat poorly drained. They are in smooth interstream areas. They have a loamy fine sand surface layer and a sandy loam subsoil.

Autryville soils are well drained and are near drainageways. They have a loamy fine sand surface layer and a fine sandy loam subsoil.

The minor soils in this unit are the more sloping Marvyn soils on short side slopes, Torhunta and Murville soils on flats and in depressions, and Leon soils in some interstream areas that have low ridges and in depressions near shallow drainageways.

In about half of the areas, the major soils are used for row crops. Wind erosion is a problem in large open fields. Droughtiness is a limitation on Autryville soils, and a seasonal high water table is a limitation on Stallings and Woodington soils.

The major soils are suited to cultivated crops, poorly suited or well suited to urban uses, and well suited or suited to use as habitat for openland and woodland wildlife. Wetness is a limitation for urban uses on Stallings and Woodington soils.

5. Leaf-Lenoir-Craven

Nearly level to sloping, poorly drained, somewhat poorly drained, and moderately well drained soils that have a clayey subsoil; on uplands

These soils are in broad and smooth areas, except for those that are on the short sides of divides, which gradually slope to drainageways. Several areas are in the eastern part of the county. Some areas in the northeastern part are broad and long, and make up a major part of the county's productive woodland.

This unit makes up about 11 percent of the county. About 37 percent is Leaf soils, 24 percent is Lenoir soils, 23 percent is Craven soils, and 16 percent is soils of minor extent.

Leaf soils are poorly drained. They are in the middle of interstream areas. They have a silt loam surface layer and a clay subsoil.

Lenoir soils are somewhat poorly drained. They are in the interstream areas between the Leaf and Craven soils. They have a loam surface layer and a clay subsoil.

Craven soils are moderately well drained and are near drainageways. They have a very fine sandy loam surface layer and a clay subsoil.

The minor soils in this unit are the Bayboro soils on slightly lower areas, the Muckalee soils in drainageways, and some small areas of Grantham, Nahunta, and Exum soils.

The major soils are used mainly as woodland. They are also used for row crops. A seasonal high water table is a major limitation to the use of Craven, Leaf, and Lenoir soils for row crops and pasture.

Most of the major soils, if artificially drained, are suited to farm crops and to use as habitat for openland, woodland, and wetland wildlife. They are poorly suited to urban uses because of slow permeability, low strength, moderate to high shrink-swell potential, and the seasonal high water table.

6. Muckalee

Nearly level, poorly drained soils that have loamy and sandy underlying material; on flood plains

These soils are along major streams. The areas are long and narrow and are at the lowest elevations in the county.

This map unit makes up about 8 percent of the county. About 74 percent of the unit is Muckalee soils, and 26 percent is soils of minor extent.

The Muckalee soils have a surface layer of loam. The underlying layers are sandy loam and loamy sand.

The minor soils are Pactolus soils in narrow areas along the sides of stream channels, Hobonny soils on broad flats near tidal areas, and Grifton, Stockade, and Meggett soils in some narrow drainageways that join upland depressions.

Muckalee soils are forested. Frequent flooding and a high water table are limitaitons.

The soils are poorly suited to farming and to urban and recreation uses because of wetness. They are well suited to use as habitat for wetland wildlife.

7. Alpin-Kenansville

Nearly level and gently sloping, excessively drained and well drained soils that have a sandy or loamy subsoil; on stream terraces

These soils are adjacent to the Trent River and other major streams. The areas are long and narrow. They are much lower in elevation than the adjoining uplands, but higher than the adjoining flood plains.

The unit makes up about 5 percent of the county. About 29 percent of the unit is Alpin soils, 28 percent is Kenansville soils, and 43 percent is soils of minor extent.

Alpin soils are excessively drained. They are in undulating areas. They have a surface layer and a subsoil of fine sand.

Kenansville soils are well drained. They are on low ridges and in slight depressions. They have a surface layer of loamy fine sand and a subsoil of fine sandy loam.

The minor soils are the Pactolus soils in wide, slightly depressed areas; Kalmia soils near drainageways; Johns soils in depressions near drainageways; and Muckalee soils on flood plains along the Trent River.

About half of the acreage of the major soils has been cleared and is used mainly for row crops. The rest is mainly woodland. Susceptibility to leaching of plant nutrients, wind erosion, and droughtiness are limitations on Alpin and Kenansville soils.

Kenansville soils are suited to crops; Alpin soils are not. Both soils are well suited to urban uses.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Craven very fine sandy loam, 1 to 4 percent slopes, is one of several phases in the Craven series.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

soil descriptions

AnB—Alpin fine sand, 0 to 6 percent slopes. This is an excessively drained soil along the Trent River. The areas of this soil extend from a point northeast of Comfort to the Craven County line. The areas are generally long and narrow and range from about 25 to 100 acres in size.

Typically, the surface layer is brown fine sand 8 inches thick. The subsurface layer is yellow fine sand 34 inches thick. The next layer is yellow fine sand 13 inches thick. It has very thin layers of strong brown loamy fine sand. The underlying material is very pale brown fine sand to a depth of 80 inches.

Infiltration is rapid, and surface runoff is slow. The organic matter content of the surface layer is very low. Permeability is very rapid, and the available water capacity is very low. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is below a depth of 6 feet.

Included with this soil in mapping are small areas of Kenansville, Pactolus, and Muckalee soils. The well drained Kenansville and moderately well drained and somewhat poorly drained Pactolus soils are in narrow depressions, and the poorly drained Muckalee soils are in narrow, wet drainageways. In some of the depressions soft marl is at a depth of 4 to 6 feet. The included soils make up about 15 percent of this map unit and, except for Muckalee soils, are better suited to crops than the Alpin soil.

The Alpin soil is poorly suited to crops (fig. 3). Droughtiness, leaching of plant nutrients, and wind erosion are the main limitations to use and management of this soil for crops. The addition of plant nutrients, minimum tillage, the use of cover crops, crop residue management, and windbreaks help control wind erosion and reduce leaching.

This soil is well suited to most urban uses. Lawns and shrubs are difficult to establish and maintain because of the leaching of plant nutrients and droughtiness. Caving of ditchbanks and trench walls and seepage are problems. This soil is poorly suited to recreation uses because it is sandy.

This soil is used mainly as woodland. The dominant native trees are loblolly pine, longleaf pine, turkey oak, bluejack oak, blackjack oak, and sassafras. The use of

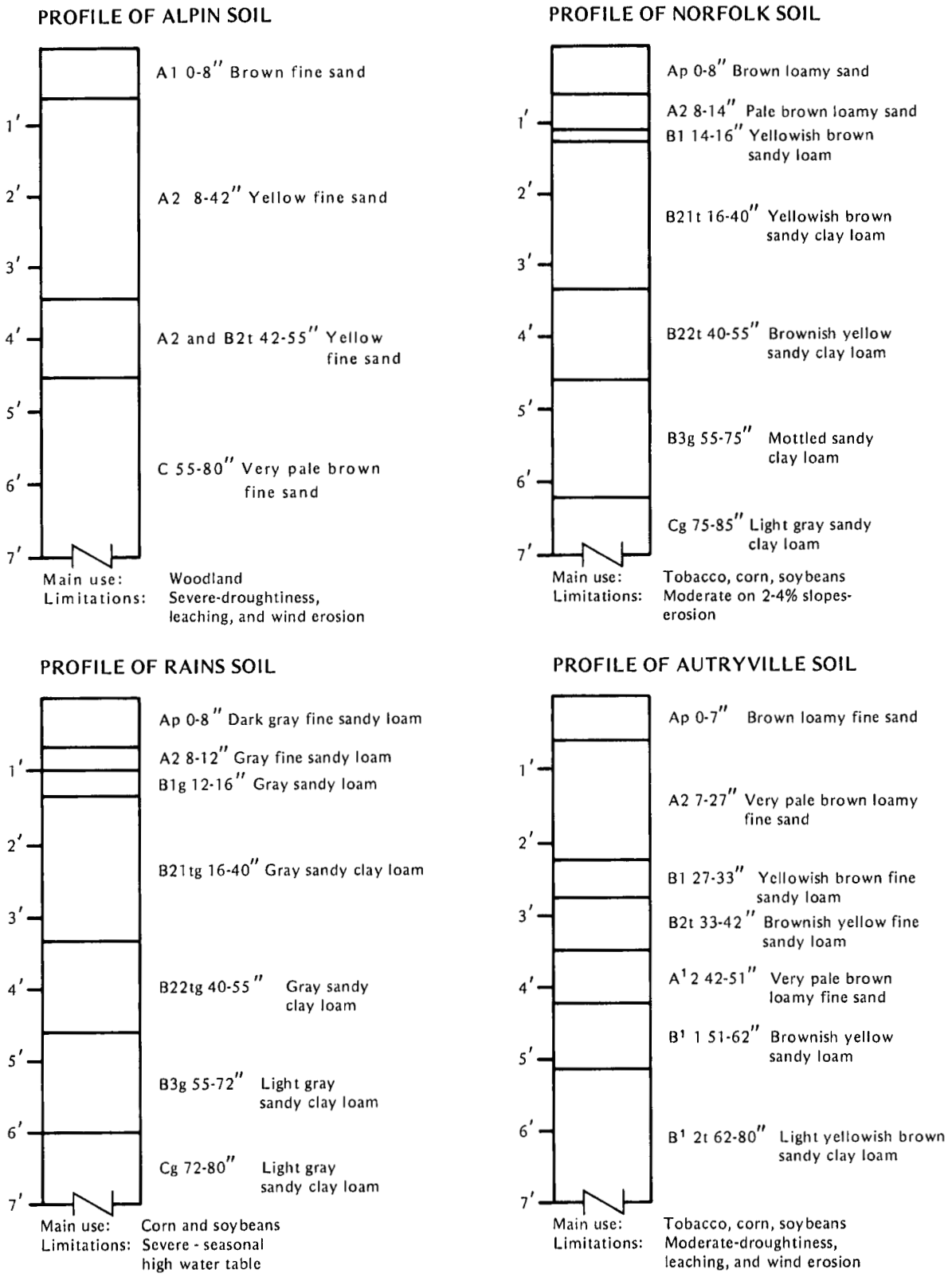

Figure 3.—The soil profile, major use, and limitations of four contrasting soils in Jones County.

equipment is restricted and seedling mortality is the main limitation.

The capability subclass is IVs. The woodland group is 3s.

AuB—Autryville loamy fine sand, 0 to 4 percent slopes. This is a well drained soil near drainageways, mainly in the western part of the county. The mapped areas are irregular in shape. They range from 10 to 25 acres in size.

Typically, the surface layer is brown loamy fine sand 7 inches thick. The subsurface layer is very pale brown loamy fine sand 20 inches thick. The subsoil to a depth of 90 inches is yellowish brown and brownish yellow fine sandy loam in the upper part, very pale brown loamy fine sand in the middle part, and brownish yellow, light yellowish brown, and light gray sandy loam and sandy clay loam in the lower part.

Infiltration is moderately rapid, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is moderately rapid in the upper part of the subsoil and moderate in the lower part, and the available water capacity is low. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 4 to 6 feet from January to April.

Included with this soil in mapping are small areas of a Norfolk soil that has a thinner surface layer than that of the Autryville soil and a soil that has a thicker surface layer and more sand than is typical of Autryville soils. Also included are small areas of Muckalee soil in narrow, wet drainageways. The included soils make up 5 to 20 percent of this unit.

This soil is suited to crops. It is mostly cultivated. The major crops are tobacco, corn, and soybeans. The leaching of plant nutrients, droughtiness, and wind erosion are the main limitations. The addition of plant nutrients, minimum tillage, and the use of cover crops help control wind erosion and reduce leaching.

This soil is well suited to most urban uses. Lawns and shrubs may be difficult to establish and maintain because of the leaching of plant nutrients and droughtiness. Caving of ditchbanks and trench walls and seepage are problems. This soil is suited to recreation uses. The sandy material is the main limitation.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, longleaf pine, post oak, white oak, red oak, dogwood, sassafras, and hickory. The use of equipment is a restriction, and seedling mortality is a limitation.

The capability subclass is IIs. The woodland group is 3s.

Ba—Bayboro loam. This is a nearly level, very poorly drained soil in shallow depressions on broad, smooth flats in interstream areas on uplands. The mapped areas are generally long and narrow and range from 10 to 45 acres in size. Two areas in the eastern part of the county are wide and are each about 1,000 acres in size.

Typically, the surface layer is 14 inches thick. It is black loam in the upper part and very dark gray loam in the lower part. The subsoil is 51 inches thick. It is dark gray clay loam in the upper part, gray clay in the middle part, and dark gray sandy clay in the lower part. The underlying material to a depth of 80 inches is gray sandy clay loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is medium. Permeability is slow, and the available water capacity is high. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 0 to 1 foot from December to May.

Included with this soil in mapping are small areas of a Bayboro soil that has a mucky loam surface layer. Also included are small areas of Pantego and Leaf soils and soils that have an organic surface layer. The included soils are intermingled throughout and make up 15 percent of this map unit.

If artificially drained, this soil is suited to crops. A small acreage is cultivated. The major crops are corn and soybeans. The seasonal high water table and slow permeability are the main limitations. A well planned and constructed drainage system can control surface runoff. The slow permeability limits internal drainage and makes it difficult to lower the water table. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some of the suitable management practices for this soil.

This soil is poorly suited to urban and recreation uses. The seasonal high water table and slow permeability are the major limitations.

Most of the acreage of this soil is woodland. The dominant native trees are loblolly pine, pond pine, water tupelo, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, loblollybay, and baldcypress. The use of equipment during seasonal wet periods is restricted, and seedling mortality is a limitation.

The capability subclass is IIIw. The woodland group is 2w.

CrB—Craven very fine sandy loam, 1 to 4 percent slopes. This is a moderately well drained soil on slightly convex divides. The areas are near the side slopes of main drainageways. This soil is in the northeastern part of the county and in two small areas in the center of the county. The areas are oblong and irregular in width and length. They range from 25 to about 50 acres in size.

Typically, the surface layer is grayish brown very fine sandy loam 7 inches thick. The subsurface layer is pale brown loam 3 inches thick. The subsoil is 48 inches thick. It is brownish yellow clay loam in the upper part, brownish yellow clay in the middle part, and light yellowish brown clay with gray mottles in the lower part. The underlying material to a depth of 80 inches is very pale brown sandy loam.

Infiltration is moderately slow, and surface runoff is medium in cultivated areas. The organic matter content of the surface layer is low. Permeability is slow, and the available water capacity is medium. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is below a depth of 2 or 3 feet.

Included with this soil in mapping are a few areas of soils that have a loam surface layer, and also included are small areas of Lenoir, Exum, and Goldsboro soils. The Lenoir soils are at the outer edges of the mapped areas near an interstream area. The Exum and Goldsboro soils are intermingled with this Craven soil in the areas nearest drainageways. The included soils make up about 10 percent of the map unit.

This soil is suited to crops, and about one-half of the acreage is cultivated. The major crops are corn, soybeans, and tobacco. Surface runoff, slow permeability, and a seasonal high water table are the main limitations to use and management of this soil for crops. Surface grading and contour cultivation reduce erosion in gently sloping areas. The addition of plant nutrients, crop residue management, field borders (fig. 4), and use of cover crops are suitable management practices for this soil.

The seasonal high water table, slow permeability, and moderate shrink-swell potential are limitations to most urban uses. This soil is suited to most recreation uses. Wetness and slow permeability are the main limitations.

About half of the acreage of this soil is woodland. The dominant native trees are loblolly pine, sweetgum, southern red oak, white oak, yellow-poplar, and American sycamore. Other native species are holly, dogwood, red maple, hickory, black cherry, and persimmon. The use of equipment during seasonal wet periods, mainly in winter, is restricted.

Figure 4.—A border of fescue protects the field edge from erosion. The soil is Craven very fine sandy loam, 1 to 4 percent slopes.

The capability subclass is IIIe. The woodland group is 3w.

CrC—Craven very fine sandy loam, 4 to 8 percent slopes. This is a moderately well drained soil on side slopes on uplands. Most areas are in the northeastern part of the county, and two small areas are in the center of the county. The mapped areas are long and narrow and range from 5 to about 20 acres in size.

Typically, the surface layer is grayish brown very fine sandy loam 7 inches thick. The subsurface layer is pale brown loam 3 inches thick. The subsoil is 48 inches thick. It is brownish yellow clay loam in the upper part, brownish yellow clay in the middle part, and light yellowish brown clay in the lower part. The underlying material to a depth of 80 inches is very pale brown sandy loam.

Infiltration is moderately slow, and surface runoff is rapid. The organic matter content of the surface layer is low. Permeability is slow, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is below a depth of 2 to 3 feet.

Included with this soil in mapping are some areas of soils that have slopes of more than 8 percent and a few small areas of Craven soil that is eroded and has a clay loam surface layer. Also included are small areas of Marvyn and Muckalee soils. The Marvyn soils are intermingled, and the Muckalee soils are in narrow drainageways. The included soils make up about 20 percent of this map unit.

This soil is poorly suited to crops. A small acreage is cultivated, chiefly in corn and soybeans. The short slopes and the rapid runoff are limitations. Contour cultivation and crops that provide close ground cover are needed to control erosion.

The slow permeability, moderate shrink-swell potential of the clayey subsoil, and a seasonal high water table are limitations to most urban uses. The soil is suited to most recreation uses. Wetness and slow permeability are the main limitations.

This soil is used mainly as woodland. The dominant native trees are loblolly pine, southern red oak, white oak, and yellow-poplar. Other native trees are holly, sweetgum, red maple, dogwood, hickory, black cherry, and persimmon. The use of equipment during seasonal wet periods, mainly in winter, is restricted.

The capability subclass is IVe. The woodland group is 3w.

Ct—Croatan muck. This is a nearly level, very poorly drained soil in areas between widely spaced natural drains. There are five major areas of this soil in Jones County: two in the northwestern part of the county, two in the eastern part, and one in the south-central part. Four of the areas are at a higher elevation than the surrounding mineral soils. In the fifth area, in the northwestern part of the county, the organic layer is thicker than in the other areas. The areas are large and wooded and are inaccessible during parts of the year because of water and dense vegetation. Observations of this soil were not so detailed as those of other soils; however, the mapping has been controlled well enough to make interpretations for the expected uses.

Typically, the black organic matter is well decomposed, is 28 inches thick, and has a mineral content of 5 to 25 percent. The underlying material to a depth of 80 inches is black mucky sandy loam in the upper part, dark brown sandy loam and grayish brown sandy clay loam in the middle part, and mottled grayish brown and dark gray loamy sand in the lower part.

Infiltration is moderate, and surface runoff is slow. This soil is high in organic matter content. The organic matter will burn when dry. Permeability is slow in the upper part and moderate in the lower part. The available water capacity is high, and the volume change is high when the soil is dry. The soil is very strongly acid or extremely acid throughout, except where the surface layer has been limed. A seasonal high water table is at or near the surface. This soil is subject to rare flooding.

Included with this soil in mapping are areas of Bayboro, Pantego, Murville, and Torhunta soils. These are mainly transitional areas that were inaccessible during field mapping. The Bayboro, Pantego, Murville, and Torhunta soils are at the edges of the mapped areas. In a few small areas a hardpan underlies the organic layer, and in small intermingled areas the muck is more than 51 inches thick. The included soils make up about 25 percent of the mapped area.

If artificially drained, this soil is suited to crops, chiefly corn and soybeans. The seasonal high water table, which restricts aeration of plant roots, is a limitation. A well planned and constructed drainage system can lower the water table. Excessive drainage, however, can cause subsidence and increases the hazard of fire in the organic matter.

This soil is poorly suited to urban and recreation uses. The seasonal high water table, low strength, and very slow surface runoff are the major limitations.

Nearly all the acreage of this soil is woodland. The dominant native species are loblolly pine, pond pine, sweetgum, water tupelo, loblollybay, sweetbay, and baldcypress. Seedling mortality is a limitation, and use of equipment is restricted.

The capability subclass is VIIw undrained and IVw drained. The woodland group is 4w.

ExA—Exum very fine sandy loam, 0 to 2 percent slopes. This is a moderately well drained soil on slightly convex divides on uplands. The areas are mostly near Pollocksville. The areas are irregular in shape and range from 10 to 25 acres in size.

Typically, the surface layer is grayish brown very fine sandy loam 7 inches thick. The subsurface layer is pale brown very fine sandy loam 4 inches thick. The subsoil is

51 inches thick. It is light yellowish brown loam in the upper part, brownish yellow and pale brown clay loam in the middle part, and light gray clay loam in the lower part. The underlying material to a depth of 80 inches is light gray loamy sand, sandy clay loam, and sandy loam.

Infiltration is moderately slow, and surface runoff is slow in cultivated areas. The organic matter content of the surface layer is low. Permeability is moderately slow, and the available water capacity is high. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is 2 to 3 feet below the surface.

Included with this soil in mapping are a few small areas of Craven and Nahunta soils. Craven soils are near side slopes, and Nahunta soils are near interstream areas. The included soils make up about 15 percent of this unit.

This soil is well suited to crops. Most of the acreage is cultivated; the main crops are corn, soybeans, and tobacco. A seasonal high water table is a limitation for some crops. Artificial drainage helps control the water table and improves aeration in the lower part of the root zone. The addition of plant nutrients, crop residue management, and the use of cover crops are suitable management practices for this soil.

This soil is suited to most urban uses. A seasonal high water table and low strength are the main limitations. This soil is suited to most recreation uses. Wetness and moderately slow permeability are the main limitations.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, sweetgum, southern red oak, white oak, yellow-poplar, and American sycamore. Other native trees are holly, dogwood, hickory, black cherry, and persimmon. The use of equipment during seasonal wet periods, mainly in winter, is restricted.

The capability subclass is IIw. The woodland group is 2w.

GoA—Goldsboro loamy sand, 0 to 2 percent slopes. This is a moderately well drained soil near drainageways on uplands. This soil is extensive in most parts of the county but mainly in the west-central and southeastern parts. The mapped areas are long and are irregular in width. They range from 15 to about 100 acres in size.

Typically, the surface layer is grayish brown loamy sand 8 inches thick. The subsurface layer is light brownish gray loamy sand 6 inches thick. The subsoil is 58 inches thick. It is light yellowish brown sandy loam in the upper part, brownish yellow and light yellowish brown sandy clay loam and gray sandy clay in the middle part, and gray sandy clay loam in the lower part. The underlying material to a depth of 80 inches is gray sandy loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content in the surface layer is low. Permeability is moderate, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is at a depth below 2 or 3 feet.

Included with this soil in mapping are small areas of a Goldsboro soil that has a fine sandy loam surface layer. Also included are small areas of the well drained Norfolk soils, the somewhat poorly drained Lynchburg soils, and some soils that are medium acid to neutral in the lower part of the subsoil. The Norfolk soils are near drainageways, and the Lynchburg soils are in slight depressions. The included soils make up about 10 percent of this map unit.

This soil is well suited to crops, and most of the acreage is cultivated. The major crops are corn, soybeans, and tobacco. A seasonal high water table is the main limitation to use and management of this soil for some crops. Artificial drainage helps control the seasonal high water table and improves aeration in the lower part of the root zone. Addition of plant nutrients, crop residue management, and the use of cover crops help maintain tilth and the organic matter content.

This soil is suited to most urban uses. The seasonal high water table is the main limitation. This soil is suited to recreation uses. Wetness is the main limitation.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, yellow-poplar, sweetgum, and American sycamore. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak. The use of equipment during seasonal wet periods, mainly winter, is restricted.

The capability subclass is IIw. The woodland group is 2w.

Gr—Grantham loam. This is a nearly level, poorly drained soil in shallow depressions in interstream areas. Most of the acreage is in the vicinity of Pollocksville. The mapped areas are oblong and range from about 5 to 25 acres in size.

Typically, the surface layer is dark gray loam 9 inches thick. The subsurface layer is gray loam 4 inches thick. The subsoil to a depth of 80 inches is light brownish gray and light gray clay loam.

Infiltration is moderately slow, and surface runoff is slow in cultivated areas. The organic matter content of the surface layer is medium. Permeability is moderately slow, and the available water capacity is high. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The water table is at the surface or at a depth of 1 foot from December to May.

Included with this soil in mapping are Leaf and Nahunta soils. These soils are intermingled with this Grantham soil and make up about 20 percent of the map unit.

If artificially drained, this soil is suited to crops. About one-third of the acreage is cultivated, mainly in corn and soybeans. The seasonal high water table is the main limitation to use and managment for crops. A well

planned and constructed drainage system helps lower the water table. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are suitable management practices for this soil.

This soil is poorly suited to most urban uses. The seasonal high water table, low strength, and moderately slow permeability are the main limitations. This soil is poorly suited to recreation uses because of seasonal wetness.

Most of the acreage of this soil is woodland. The dominant native trees are loblolly pine, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment during seasonal wet periods is restricted, and seedling mortality is the main limitation.

The capability subclass is IIIw. The woodland group is 2w.

Gt—Grifton fine sandy loam. This is a nearly level, poorly drained soil in shallow depressions around the head of drainageways and in broad interstream areas. This soil is mainly in the vicinity of Phillips Crossroads, Comfort, and Wise Forks. The areas at the head of drainageways are long and narrow and range from 5 to 15 acres in size. The broad interstream areas range from about 30 to 50 acres in size.

Typically, the surface layer is dark gray fine sandy loam 8 inches thick. The subsurface layer is gray sandy loam 3 inches thick. The subsoil is 49 inches thick. It is gray sandy loam in the upper part, gray sandy clay loam in the middle part, and gray sandy loam in the lower part. The underlying material to a depth of 80 inches is light bluish gray soft marl that crushes to sandy clay loam, sand, and sandy clay.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is medium. Permeability is moderate, and the available water capacity is medium. The surface layer ranges from strongly acid to slightly acid, except where it has been limed. The subsoil ranges from neutral to moderately alkaline. The water table is at a depth of 0.5 to 1.0 foot from December to May.

Included with this soil in mapping are small areas of Meggett and Stockade soils in narrow depressions. Also included are small, intermingled areas of a soil that has better drainage than the Grifton soil. The included soils make up 20 percent of this map unit.

If artificially drained, this soil is suited to crops. About one-half of the acreage is cultivated, chiefly in corn and soybeans. The seasonal high water table is the main limitation. A well planned and constructed drainage system helps lower the water table. The marl substrata make construction of deep ditches difficult. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are suitable management practices for this soil.

This soil is poorly suited to most urban and recreation uses. The seasonal high water table is the main limitation.

About one-half of the acreage of this soil is woodland. The dominant native trees are loblolly pine, cherrybark oak, white oak, eastern cottonwood, water tupelo, and sweetgum. Other native trees are water oak, willow oak, red maple, redcedar, and American sycamore. The use of equipment during seasonal wet periods is restricted, and seedling mortality is a limitation.

The capability subclass is IIIw. The woodland group is 2w.

Ho—Hobonny muck. This is a nearly level, very poorly drained soil on flood plains at elevations of less than 5 feet. This soil is subject to flooding by tides. It is along the White Oak River in the southeastern part of the county. The mapped areas are long and are irregular in width and range from 50 to several hundred acres in size. They are large and are inaccessible during most of the year because of water and dense vegetation. Observations of this soil were not so detailed as those of other soils; however, the mapping was controlled well enough to make interpretations for the expected uses.

Typically, black, well decomposed organic matter extends to a depth of about 60 inches. The underlying material to a depth of 70 inches is black mucky silt loam mixed with sand. A live root mat is in the uppermost few inches.

Internal drainage is very slow, or there is none. The organic matter content is high. Permeability is moderate, and the available water capacity is high. The soil ranges from very strongly acid to medium acid. The water table is near or above the surface, and the soil is subject to flooding by tides.

Included with this soil in mapping are narrow areas of sandy soils along streambanks and small areas where the muck is thinner than is typical for Hobonny soils. The included soils make up 20 percent of this map unit.

This soil is poorly suited to farming, forestry, and recreation uses because it is flooded for long periods. It is also poorly suited to urban uses because of flooding, ponding, and low strength.

The vegetation is mainly cattail and big cordgrass and sparse stands of baldcypress and black tupelo. The areas are mainly used as wildlife habitat and are well suited to use as habitat for wetland wildlife. They are well suited to use as shallow water habitat and to wetland plants.

The capability subclass is VIIw.

Jo—Johns fine sandy loam. This is a nearly level, somewhat poorly drained and moderately well drained soil on stream terraces. The areas are mostly near the Trent River, which flows west to east through the middle of the county. The areas are oblong and range from 10 to 25 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam 9 inches thick. The subsoil is 29 inches thick. It is brown sandy loam in the upper part and yellowish brown sandy clay loam in the lower part. The underlying material to a depth of 65 inches is gray sand.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is moderate, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is at a depth of 1.5 to 3 feet.

Included with this soil in mapping are small intermingled areas of a well drained Kalmia soil and small areas of a poorly drained soil. The included soils make up about 20 percent of this map unit.

If artificially drained, this soil is well suited to crops, and most of the acreage is cultivated. The major crops are corn, soybeans, and tobacco. The seasonal high water table is the main limitation. A well planned and constructed drainage system helps lower the water table. Caving of ditchbanks is a problem. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are suitable management practices for this soil.

This soil is poorly suited to most urban uses. The seasonal high water table is the main limitation. This soil is suited to recreation uses. Seasonal wetness is the main limitation.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, sweetgum, water oak, willow oak, red maple, redcedar, and American sycamore. The use of equipment during seasonal wet periods, mainly winter, is restricted.

The capability subclass is IIw. The woodland group is 2w.

KaA—Kalmia loamy sand, 0 to 3 percent slopes. This is a well drained soil on slightly convex stream terraces. Most areas are near the Trent River, which flows west to east through the middle of the county. The mapped areas are oblong and range from 10 to 30 acres in size.

Typically, the surface layer is brown loamy sand 9 inches thick. The subsoil is 29 inches thick. It is yellowish brown sandy loam in the upper part, yellowish brown sandy clay loam in the middle part, and yellowish brown sandy loam in the lower part. The underlying material to a depth of 65 inches is light gray sand.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is moderate, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table remains below a depth of about 6 feet.

Included with this soil in mapping are areas of a Kalmia soil that has a fine sandy loam surface layer. Small areas of Johns and Kenansville soils are also included. The Johns soils are in long, narrow areas. They are slightly lower on the landscape than the Kalmia soils. The Kenansville soils are in small intermingled areas in slightly higher positions than the Kalmia soils. The included soils make up about 20 percent of this map unit.

This soil is well suited to crops. Most of the acreage is cultivated. The main crops are corn, tobacco, and soybeans. The addition of plant nutrients, crop residue management, and the use of cover crops are suitable management practices for this soil.

This soil is well suited to urban uses and most recreation uses.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, yellow-poplar, and cherrybark oak. Other native trees are holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak.

The capability class is I. The woodland group is 2o.

KeA—Kenansville loamy fine sand, 0 to 3 percent slopes. This is a well drained soil on broad, low ridges and in narrow depressions on stream terraces. The areas are mostly near the Trent River, which flows from west to east through the middle of the county. The larger areas are generally broad and long. They range from 25 to about 100 acres in size. Smaller areas in narrow depressions range from 5 to 15 acres in size.

Typically, the surface layer is grayish brown loamy fine sand 7 inches thick. The subsurface layer is pale brown loamy fine sand 20 inches thick. The subsoil is 21 inches thick. It is yellowish brown fine sandy loam in the upper part and yellowish brown loamy fine sand in the lower part. The underlying material to a depth of 60 inches is very pale brown sand.

Infiltration is rapid, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is moderately rapid, and the available water capacity is low. The soil ranges from very strongly acid to medium acid throughout, except where the surface layer has been limed. The seasonal high water table remains at a depth below about 6 feet.

Included with this soil in mapping are small areas of the Alpin, Kalmia, and Pactolus soils. The Alpin soils are in slightly higher positions than those of the Kenansville soil, and the Kalmia and Pactolus soils are in slightly lower positions. The included soils make up about 15 percent of this map unit.

This soil is suited to crops. It is mostly cultivated. Corn, soybeans, and tobacco are the major crops. Droughtiness, the leaching of plant nutrients, and wind erosion are the main limitations. The addition of plant nutrients, minimum tillage, crop residue management, and the use of cover crops help control wind erosion and reduce leaching.

This soil is well suited to most urban uses. Lawns and shrubs may be difficult to establish and maintain because of the leaching of plant nutrients and droughtiness. Caving of ditchbanks and trench walls and seepage are problems. This soil is suited to recreation uses. The sandy material is the main limitation.

A small acreage of this soil is woodland. The dominant

native trees are loblolly pine and longleaf pine. Other native trees are white oak, red oak, dogwood, sassafras, and hickory. The use of equipment is restricted, and seedling mortality is the main limitation.

The capability subclass is IIs. The woodland group is 3s.

La—Leaf silt loam. This is a nearly level, poorly drained soil in broad interstream areas. The larger areas are in the northeastern part of the county, and the other areas are in the central and southeastern parts. The areas are long and broad and range from 15 to 300 acres in size.

Typically, the surface layer is dark gray silt loam 8 inches thick. The subsurface layer is light brownish gray silt loam 3 inches thick. The subsoil is 69 inches thick. It is light brownish gray clay in the upper part, light gray clay in the middle part, and gray clay loam in the lower part. The underlying material to a depth of 90 inches is light gray loam.

Infiltration is slow, and surface runoff is slow. The organic matter content of the surface layer is medium. Permeability is very slow, and the available water capacity is medium. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 0.5 foot to 1.5 feet from January to April.

Included with this soil in mapping are small areas of Lenoir, Bayboro, and Grantham soils. The Lenoir and Grantham soils are in small, intermingled areas, and the Bayboro soils are in shallow depressions. The included soils make up about 15 percent of this map unit.

This soil is poorly suited to crops. A few small artificially drained areas are in corn and soybeans (fig. 5). The seasonal high water table and very slow permeability are the main limitations. A well planned and constructed surface drainage system can control runoff. The very slow permeability limits internal drainage, making it difficult to lower the water table. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are suitable management practices for this soil.

The soil is poorly suited to most urban uses. The water table, high shrink-swell potential of the clayey subsoil, and the very slow permeability are the main

Figure 5.—Soybeans and corn in a drained area of Leaf silt loam.

limitations. This soil is poorly suited to recreation use because of seasonal wetness and very slow permeability.

Most areas of this soil are woodland. The dominant native trees are loblolly pine, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment during seasonal wet periods is restricted, and seedling mortality is the main limitation.

The capability subclass is IVw. The woodland group is 2w.

Le—Lenoir loam. This is a nearly level, somewhat poorly drained soil in broad interstream areas. The mapped areas are in the northeastern, central, and southeastern parts of the county. They are long and broad and range from about 25 to 200 acres in size.

Typically, the surface layer is dark gray loam 6 inches thick. The subsurface layer is light brownish gray loam 3 inches thick. The subsoil is 56 inches thick. It is pale brown clay loam in the upper part, light brownish gray and gray clay in the middle part, and gray clay in the lower part. The underlying material to a depth of 80 inches is gray clay.

Infiltration is slow, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is slow, and the available water capacity is medium. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 1 foot to 2.5 feet from December to May.

Included with this soil in mapping is a poorly drained Leaf soil in small depressions.

If artificially drained, this Lenoir soil is suited to crops. A small acreage is in corn and soybeans. The seasonal high water table and slow permeability are the main limitations. A well planned and constructed surface drainage system helps control runoff, but the slow permeability limits internal drainage. The addition of plant nutrients, crop residue managment, bedding, and use of cover crops are suitable management practices for this soil.

This soil is poorly suited to most urban uses. The seasonal high water table, moderate shrink-swell potential of the clayey subsoil, and slow permeability are the main limitations. This soil is moderately suited to poorly suited to recreation uses. Seasonal wetness is the main limitation.

Most of the acreage of this soil is woodland. The dominant native trees are loblolly pine, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment during seasonal wet periods is restricted, and seedling mortality is the main limitation.

The capability subclass is IIIw. The woodland group is 2w.

Ln—Leon sand. This is a nearly level, poorly drained soil in broad, smooth interstream areas on uplands. Most areas are between Pleasant Hill and the southwestern corner of the county. The areas are irregular in shape and range from 5 to 50 acres in size.

Typically, the surface layer is very dark gray sand 6 inches thick. The subsurface layer is light gray sand 9 inches thick. The subsoil is dark reddish brown sand 15 inches thick. Below the subsoil there is grayish brown and black sand to a depth of about 80 inches.

Infiltration is rapid, and surface runoff is slow. The organic matter content is very low. Permeability is moderate to moderately rapid, and the available water capacity is low. The soil is very strongly acid or extremely acid throughout, except where the surface layer has been limed. The water table is at the surface or at a depth of 1 foot from June to February.

Included with this soil in mapping are similar soils that have a loamy subsoil below 30 inches and small areas of the Murville, Pactolus, Stallings, and Woodington soils. The Murville soils are in depressions, and Pactolus, Stallings, and Woodington soils are intermingled with the Leon soil. In most of the mapped areas of this unit southeast of Mayesville to Carteret County, there are loamy layers 3 to 5 feet below the surface and woodland growth is better than on Leon sand. Also included are some soils that have a hardpan that retards or restricts root growth. The included soils make up 20 percent of this map unit.

This soil is poorly suited to crops mainly because of the leaching of plant nutrients and the seasonal high water table. Artificial drainage may be needed for some uses. Cutbanks cave in because of the loose, sandy layers, causing management problems.

This soil is poorly suited to urban and recreation uses because of the water table, seepage, and caving of cutbanks.

Most areas of this soil are woodland. The dominant native trees are loblolly pine and longleaf pine. The use of equipment during seasonal wet periods is restricted, and seedling mortality is the main limitaiton.

The capability subclass is IVw. The woodland group is 4w.

Ly—Lynchburg fine sandy loam. This is a nearly level, somewhat poorly drained soil near shallow drainageways. This soil is extensive in most of the county but mainly in the west central and southeastern parts. The larger areas of this soil are on broad interstream divides. They range from 50 to about 150 acres in size. The smaller areas are in shallow depressions on slightly convex divides and are 5 to 10 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam 8 inches thick. The subsurface layer is light brownish gray fine sandy loam 4 inches thick. The subsoil is 54 inches thick. It is pale brown sandy loam in the upper part, mottled light yellowish brown, light brownish gray, brownish yellow, and gray sandy clay loam in the middle part, and light gray sandy clay loam in

the lower part. The underlying material to a depth of 80 inches is light gray sandy clay loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is moderate, and the available water capacity is medium. The soil ranges from extremely acid to strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 0.5 foot to 1.5 feet from November to April.

Included with this soil in mapping are areas of a Lynchburg soil that has a sandy loam surface layer. Also included are small areas of moderately well drained Goldsboro soils, poorly drained Rains soils, and soils that are medium acid to neutral in the lower part of the subsoil. Goldsboro soils are at the outer edges of the mapped areas near drainageways, and Rains soils are on the interstream side of the mapped areas. The included soils make up about 15 percent of this map unit.

If artificially drained, this soil is suited to crops. Most of the acreage is cultivated. The major crops are corn and soybeans. The seasonal high water table is the main limitation. A well planned and constructed drainage system helps lower the water table. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are suitable management practices for this soil.

This soil is poorly suited to most urban uses. The seasonal high water table is the main limitation. This soil is poorly suited to most recreation uses because of the water table.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, American sycamore, and sweetgum. Other native trees are water oak, willow oak, red maple, white oak, redcedar, southern red oak, and yellow-poplar. The use of equipment during wet periods in winter is restricted.

The capability subclass is IIw. The woodland group is 2w.

MaC—Marvyn loamy sand, 6 to 15 percent slopes. This is a well drained soil on side slopes near major drainageways. The mapped areas are long and narrow. They range from 5 to about 25 acres in size.

Typically, the surface layer is dark grayish brown loamy sand 3 inches thick. The subsurface layer is light yellowish brown loamy sand 14 inches thick. The subsoil is strong brown sandy clay loam 31 inches thick. The underlying material to a depth of 70 inches is reddish yellow sandy loam and yellow loamy sand.

Infiltration is moderate, and surface runoff is rapid. The organic matter content of the surface layer is low. Permeability is moderate, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is below a depth of about 6 feet.

Included with this soil in mapping are some soils that have slopes greater than 15 percent and small areas of soils that are eroded and have a sandy loam surface layer that varies in thickness. Small areas of Muckalee and Craven soils are also included. The Craven soils are intermingled with the Marvyn soil on side slopes, and the poorly drained Muckalee soils are in narrow drainageways. The included soils make up 10 to 30 percent of this map unit.

This soil is poorly suited to crops. A small acreage is cultivated. The short slopes and rapid runoff are the main limitations. Crops that provide close ground cover are needed to control erosion.

This soil is suited to urban uses. Slope, moderate permeability, and downslope seepage are the main limitations. This soil is suited to most recreation uses. Slope is the main limitation.

Most areas of this soil are woodland. The dominant native trees are loblolly pine and longleaf pine. Other native trees are holly, dogwood, white oak, red oak, sweetgum, and blackgum.

The capability subclass is IVe. The woodland group is 2o.

Me—Meggett loam. This is a nearly level, poorly drained soil in broad, smooth interstream areas on uplands and in slight depressions around the head of drainageways. This soil is mainly in the northwestern part of the county near Wise Forks and Phillips Crossroads. The mapped areas are generally long and narrow. They range from 5 to about 25 acres in size.

Typically, the surface layer is dark grayish brown loam 5 inches thick. The subsoil is dark gray and gray sandy clay 50 inches thick. The underlying material to a depth of 80 inches is grayish green sandy loam and sandy clay loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content is medium. Permeability is slow, and the available water capacity is high. This soil has a medium acid surface layer except in areas where it has been limed. The subsoil ranges from neutral to moderately alkaline. The seasonal high water table is at or near the surface.

Included with this soil in mapping are Meggett soils that have a sandy loam surface layer. Also included are small areas of the very poorly drained Stockade soil in small depressions. The included soils make up about 10 percent of this map unit.

If artificially drained, this soil is suited to crops. A small acreage is in crops, mainly corn and soybeans. The seasonal high water table and the slow permeability are the main limitations. A well planned and constructed surface drainage system can control runoff, but the slow permeability limits internal drainage, making it difficult to lower the water table. The marl below a depth of 55 inches makes construction of deep ditches difficult. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are suitable management practices for this soil.

This soil is poorly suited to most urban uses. The seasonal high water table, the high shrink-swell potential

of the clayey subsoil, and the slow permeability are the main limitations. The soil is poorly suited to recreation uses because of the water table.

Most areas of this soil are woodland. The dominant native trees are loblolly pine, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment is restricted during seasonal wet periods, and seedling mortality is the main limitation.

The capability subclass is IVw. The woodland group is 1w.

Mk—Muckalee loam. This is a nearly level, poorly drained soil in drainageways. The mapped areas are long and narrow and commonly range from 150 to 1,000 acres in size. They are inaccessible during part of the year because of ponded water and dense vegetation. Observations of this soil were not so detailed as those of other soils; however, the mapping has been controlled well enough to make interpretations for the expected uses.

Typically, the surface layer is dark grayish brown loam and dark gray sandy loam 24 inches thick. The underlying material to a depth of 65 inches is mottled gray and grayish brown sandy loam and greenish gray loamy sand.

Infiltration is moderate, and surface runoff is very slow. The wide, flat areas are ponded in winter. The organic matter content in the surface layer is medium. Permeability is moderate, and the available water capacity is medium. The surface layer ranges from medium acid to neutral. The water table is at a depth of 0.5 foot to 1.5 feet. This soil is frequently flooded for brief periods.

Included with this soil in mapping are some small areas of sandy soils near streambanks and soils, on wide flood plains, that have a thick, mucky surface layer. The included soils make up about 25 percent of this map unit.

This soil is poorly suited to crops. Flooding and a high water table are the main limitations. Flood control and artificial drainage help reduce wetness.

This soil is poorly suited to recreation uses. The high water table and stream overflow are the main limitations. The soil has severe limitations for urban uses because of frequent flooding and wetness.

Nearly all of the acreage is woodland. The dominant native trees are loblolly pine, sweetgum, and eastern cottonwood. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, loblollybay, and baldcypress. The use of equipment is restricted, and seedling mortality is a limitation.

The capability subclass is Vw. The woodland group is 2w.

Mu—Murville fine sand. This is a nearly level, very poorly drained soil in depressions in broad interstream areas and terraces. Most areas of this soil are in the southwestern part of the county. The areas are generally long and narrow. They range from 10 to 20 acres in size.

Typically, the surface layer is black fine sand 10 inches thick. The subsoil is black and dark reddish brown sand 40 inches thick. The underlying material to a depth of 72 inches is brown sand.

Infiltration is rapid, and surface runoff is slow. The organic matter content is medium. Permeability is moderately rapid, and the available water capacity is low. The soil ranges from strongly acid to extremely acid throughout, except where the surface layer has been limed. The water table is at the surface or at a depth of 1 foot from November to May.

Included with this soil in mapping are some soils that have a thin, light gray subsurface layer and some soils that have a mucky surface layer. Also included are some soils that have a hardpan that retards or restricts root growth. The included soils are in small intermingled areas and make up about 15 percent of this map unit.

If artificially drained, this soil is suited to crops. A small acreage is in crops, mainly corn and soybeans. The water table is the main limitation. A well planned and constructed drainage system can lower the water table. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some management practices suitable for this soil.

This soil is poorly suited to urban uses. The high water table and seepage are the main limitations. The soil is poorly suited to recreation uses because of the high water table.

Most areas of this soil are woodland. The dominant native trees are pond pine, loblolly pine, and water tupelo. Other native trees are water oak, willow oak, red maple, loblollybay, sweetbay, and baldcypress. The use of equipment is restricted during seasonal wet periods, and seedling mortality is a limitation.

The capability subclass is Vw. The woodland group is 2w.

Na—Nahunta loam. This is a nearly level, somewhat poorly drained soil near shallow drainageways. Nearly all of this soil is around Pollocksville. The mapped areas range from 5 to about 25 acres in size. The smaller areas are in shallow depressions on slightly convex divides and are 5 to 10 acres in size.

Typically, the surface layer is dark gray loam 7 inches thick. The subsurface layer is pale brown loam 5 inches thick. The subsoil is 60 inches thick. It is pale brown loam in the upper part and brown and gray clay loam in the middle and lower parts. The underlying material to a depth of 80 inches is light gray loam and loamy sand.

Infiltration is moderately slow, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is moderately slow, and the available water capacity is high. The soil ranges from extremely acid to strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 1 foot to 2.5 feet from December to May.

Included with this soil in mapping are small areas of a moderately well drained Exum soil and a poorly drained Grantham soil. The Exum soil is near drainageways, and the Grantham soil is near the center of interstream areas. The included soils make up about 15 percent of this map unit.

If artificially drained, this soil is suited to crops, and most of the acreage is cultivated. The major crops are corn and soybeans. A seasonal high water table is the main limitation. A well planned and constructed drainage system helps lower the seasonal high water table. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some of the suitable management practices for this soil.

This soil is poorly suited to most urban uses. A seasonal high water table is the main limitation. Low strength is a limitation for local roads and streets. This soil is moderately suited or poorly suited to most recreation uses. The seasonal high water table is the main limitation.

A small acreage is woodland. The dominant trees are loblolly pine, American sycamore, and sweetgum. Other native trees are water oak, willow oak, red maple, white oak, redcedar, southern red oak, and yellow-poplar. The use of equipment is restricted during seasonal wet periods, and seedling mortality is the main limitation.

The capability subclass is IIw. The woodland group is 2w.

NoB—Norfolk loamy sand, 1 to 4 percent slopes. This well drained soil is near major drainageways in the western, central, and southeastern parts of the county. The mapped areas are oblong and range from 5 to about 30 acres in size.

Typically, the surface layer is brown loamy sand 8 inches thick. The subsurface layer is pale brown loamy sand 6 inches thick. The subsoil is 61 inches thick. It is yellowish brown sandy loam in the upper part, yellowish brown and brownish yellow sandy clay loam in the middle part, and mottled light gray, yellowish brown, and yellowish red sandy clay loam in the lower part. The underlying material to a depth of 85 inches is light gray sandy clay loam.

Infiltration is moderate, and surface runoff is medium. The organic matter content of the surface layer is low. Permeability is moderate, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table remains below a depth of 4 to 6 feet.

Included with this soil in mapping are a Norfolk soil that has a fine sandy loam surface layer, a few small areas of a soil that is eroded, and small areas of a soil that has slopes of more than 4 percent. Also included are Goldsboro, Autryville, and Muckalee soils. Autryville soils are in small areas near drainageways, and Goldsboro soils are in nearly level places. The Muckalee soils are in narrow, wet drainageways. The included soils make up about 15 percent of this map unit.

This soil is well suited to crops, and most of the acreage is cultivated. The major crops are tobacco, corn, and soybeans. Erosion is a hazard on the gentle slopes if the soil is used for row crops. The addition of plant nutrients, minimum tillage, the use of cover crops, including grasses and legumes in the cropping system, contour cultivation, and crop residue management help reduce runoff and control erosion.

This soil is well suited to urban uses. An occasional high water table during wet periods is a limitation. This soil is well suited to most recreation uses.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, holly, dogwood, hickory, black cherry, persimmon, red oak, and white oak.

The capability subclass is IIe. The woodland group is 2o.

On—Onslow fine sandy loam. This is a nearly level, moderately well drained soil in interstream areas near drainageways. The areas surround the Hofmann, Croatan, and Great Dover Swamp Forests. The areas are nearly as broad as they are long and range from 10 to about 20 acres in size.

Typically, the surface layer is dark gray fine sandy loam 9 inches thick. The subsurface layer is pale brown loamy fine sand 6 inches thick. It has an intermittent thin hardpan. The subsoil is 61 inches thick. It is light olive brown and pale brown sandy clay loam in the upper part and gray and light brownish gray sandy loam in the lower part. The underlying material to a depth of 80 inches is light brownish gray sandy clay loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content is low. Permeability is moderate, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 1.5 to 3.0 feet from December to April.

Included with this soil in mapping are small intermingled areas of Goldsboro, Lynchburg, Stallings, and Woodington soils. Also included is a soil, in small depressions, that has an organic hardpan and is not so well drained as the Onslow soil. The included soils make up about 10 percent of this map unit.

If artificially drained, this soil is well suited to crops. Most of the acreage of this soil is cultivated. The major crops are corn, soybeans, and tobacco. The seasonal high water table is a limitation to use and management of this soil for some crops. Artificial drainage helps control the seasonal high water table and improves aeration in the lower part of the root zone. The addition of plant nutrients, crop residue management, subsoiling to break up the thin subsurface hardpan, and the use of cover crops are suitable management practices for this soil.

This soil is moderately suited or poorly suited to most urban uses. The seasonal high water table is a limitation. This soil is suited to recreation uses. The water table is the main limitation.

A small acreage of this soil is woodland. The dominant native trees are loblolly pine, sweetgum, southern red oak, white oak, yellow-poplar, and American sycamore. Other native trees are holly, dogwood, hickory, black cherry, and persimmon. During seasonal wet periods, mainly in winter, the use of equipment is restricted.

The capability subclass is IIw. The woodland group is 2w.

Pa—Pactolus loamy fine sand. This is a nearly level, moderately well drained and somewhat poorly drained soil on low ridges and in depressions. The mapped areas are near the Trent River, which flows west to east through the middle of the county. The areas are oblong and range from 5 to 25 acres in size.

Typically, the surface layer is brown loamy fine sand 9 inches thick. The underlying material to a depth of 80 inches is light yellowish brown loamy fine sand in the upper part, very pale brown loamy fine sand in the middle part, and light gray sand in the lower part.

Infiltration is rapid, and surface runoff is slow. The organic matter content of the surface layer is very low. Permeability is rapid, and the available water capacity is low. The soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 1.5 to 3.0 feet from December to April.

Included with this soil in mapping are small areas of Alpin and Johns soils. The Alpin soils are slightly higher on the landscape and Johns soils are slightly lower on the landscape than the Pactolus soils. The included soils make up about 10 percent of this map unit.

This soil is poorly suited to crops. About half of the acreage is cultivated. Corn and soybeans are the major crops. Leaching of plant nutrients, the seasonal high water table, and caving of ditchbanks are the main limitations. Low available water capacity is a limitation during dry seasons. Artificial drainage may be needed for some agricultural uses. The addition of plant nutrients, crop residue management, and the use of cover crops help reduce leaching.

This soil is poorly suited to urban uses. The seasonal high water table and seepage are the main limitations. Caving of ditchbanks and trench walls are other problems. This soil is suited to recreation uses. The water table is the main limitation.

About half of the acreage of this soil is woodland. The dominant native trees are loblolly pine, sweetgum, water oak, willow oak, red maple, redcedar, and American sycamore. The use of equipment during wet periods in winter is restricted, and seedling mortality is a limitation.

The capability subclass is IIIs. The woodland group is 3w.

Pn—Pantego loam. This is a nearly level, very poorly drained soil on broad, smooth flats in interstream areas. Most areas of this soil are in the Hofmann, Croatan, and Great Dover Swamp Forests. The mapped areas range in size from 50 to about 1,000 acres.

Typically, the surface layer is black and very dark gray loam 15 inches thick. The subsoil is 53 inches thick. It is grayish brown sandy clay loam in the upper and middle parts and gray sandy clay loam in the lower part. The underlying material to a depth of 80 inches is greenish gray sandy clay loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is medium, permeability is moderate, and the available water capacity is medium. The soil ranges from extremely acid to strongly acid throughout, except where the surface layer has been limed. The water table is at the surface or at a depth of 1.5 feet from December to May.

Included with this soil in mapping are small areas of a Pantego soil that has a mucky loam or muck surface layer. Also included are soils that have less clay within 60 inches of the surface than the Pantego soil and small areas of Torhunta, Bayboro, and Rains soils. Rains soils are at the outer edge of the mapped areas, and Bayboro and Torhunta soils are intermingled throughout. The included soils make up about 20 percent of this map unit.

If artificially drained, this soil is suited to crops. A small acreage is cultivated. The major crops are corn and soybeans. The seasonal high water table is the main limitation. A well planned and constructed drainage system can lower the water table. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some suitable management practices for this soil.

This soil is poorly suited to urban and recreation uses because of the seasonal high water table.

Most areas of this soil are woodland. The dominant native trees are loblolly pine, pond pine, water tupelo, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, loblollybay, and baldcypress. The use of equipment during wet periods is restricted, and seedling mortality is a limitation.

The capability subclass is IIIw. The woodland group is 1w.

Ra—Rains fine sandy loam. This is a nearly level, poorly drained soil in broad interstream areas and in depressions near drainageways. The areas of this soil are extensive. The larger areas, between streams in the Hofmann, Croatan, and Great Dover Swamp Forests, range from 100 to about 500 acres in size. The areas in shallow depressions near drainageways range from 5 to 20 acres in size.

Typically, the surface layer is dark gray fine sandy loam 8 inches thick. The subsurface layer is gray fine sandy loam 4 inches thick. The subsoil is 60 inches thick. It is gray sandy loam in the upper part, gray sandy clay loam in the middle part, and light gray sandy clay loam in the lower part. The underlying material to a depth of 80 inches is light gray sandy clay loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is medium,

permeability is moderate, and the available water capacity is medium. This soil is very strongly acid or strongly acid throughout, except where the surface layer has been limed. The seasonal high water table is at or near the surface.

Included with this soil in mapping are areas of a Rains soil that has a sandy loam surface layer. Also included are small intermingled areas of Lynchburg, Grantham, and Pantego soils and soils that are medium acid to neutral in the lower part of their subsoil. The Lynchburg soils are in small areas along the outer edge of depressions and near shallow drainageways, and the Pantego and Grantham soils are in shallow depressions. The included soils make up about 10 percent of this map unit.

If artificially drained, this soil is suited to crops. About half of the acreage is in crops, mainly corn and soybeans. A seasonal high water table is the main limitation. A well planned and constructed drainage system helps lower the water table. Addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some of the suitable management practices for this soil.

This soil is poorly suited to most urban and recreation uses. The seasonal high water table is the main limitation.

About half of the acreage is woodland. The dominant native trees are loblolly pine, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment during wet periods is restricted, and seedling mortality is a limitation.

The capability subclass is IIIw. The woodland group is 2w.

St—Stallings loamy fine sand. This is a nearly level, somewhat poorly drained soil near shallow drainageways. Most areas are in the southwestern part of the county. The mapped areas are irregular in shape. They range from 10 to 50 acres in size.

Typically, the surface layer is dark gray loamy fine sand 8 inches thick. The subsurface layer is light brownish gray loamy fine sand 5 inches thick. The subsoil extends to a depth of 80 inches. It is pale brown sandy loam in the upper part, gray sandy loam in the middle part, and light brownish gray loamy sand in the lower part.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is low. Permeability is moderately rapid, and the available water capacity is medium. The soil ranges from extremely acid to strongly acid throughout, except where the surface layer has been limed. The water table is at a depth of 1.0 foot to 2.5 feet from December to April.

Included with this soil in mapping are small intermingled areas of Lynchburg and Woodington soils, soils that are medium acid to neutral in the lower part of the subsoil, and a moderately well drained soil near drainageways along the outer edges of the mapped areas. Also included are small areas of a soil with a thin discontinuous hardpan in the subsurface layer. The included soils make up about 20 percent of this map unit.

If artificially drained, this soil is suited for crops, and about half of the acreage is cultivated. The major crops are corn and soybeans. The seasonal high water table is the main limitation. A well planned and constructed drainage system helps lower the seasonal high water table. Caving of ditchbanks is a problem. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some of the suitable management practices for this soil.

This soil is poorly suited to most urban uses. A seasonal high water table, the caving of ditchbanks and trench walls, and seepage are the main limitations to urban uses. This soil is suited to recreation uses. The seasonal high water table is the main limitation.

About half of the acreage is woodland. The dominant native trees are loblolly pine, yellow-poplar, American sycamore, and sweetgum. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment during wet periods in winter is restricted.

The capability subclass is IIw. The woodland group is 3w.

Sx—Stockade fine sandy loam. This is a nearly level, very poorly drained soil in slight depressions and shallow drainageways in nearly level interstream areas. The areas are mostly in the north-central part of the county. They are generally narrow and long and range from 10 to 25 acres in size.

Typically, the surface layer is black and very dark gray fine sandy loam 18 inches thick. The subsoil is 34 inches thick. It is dark gray fine sandy loam in the upper part and dark gray and gray sandy clay loam in the lower part. The underlying material to a depth of 80 inches is greenish gray sandy clay loam, sandy loam, and sandy clay.

Infiltration is moderate, and surface runoff is slow. The organic matter content is medium. Permeability is moderate, and the available water capacity is medium. The soil is slightly acid to strongly acid in the surface layer, except where it has been limed. The subsoil is slightly acid to moderately alkaline. The water table is at the surface or at a depth of 1 foot from June to March.

Included with this soil in mapping is a Stockade soil that has a loam or mucky loam surface layer. Also included are the better drained Grifton and Meggett soils in small intermingled areas. The included soils make up about 15 percent of this map unit.

If artificially drained, this soil is suited to crops. A small acreage is cultivated. The major crops are corn and soybeans. The seasonal high water table is the main limitation. A well planned and constructed drainage system can lower the seasonal high water table. The marl below a depth of 55 inches makes construction of

deep ditches difficult. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some of the suitable management practices for this soil.

This soil is poorly suited to urban and recreation uses. The seasonal high water table is a restriction.

Most of the acreage is woodland. The dominant native trees are loblolly pine, pond pine, water tupelo, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, loblollybay, and baldcypress. The use of equipment during seasonal wet periods is restricted, and seedling mortality is a limitation.

The capability subclass drained is IIIw. The woodland group is 1w.

To—Torhunta fine sandy loam. This is a nearly level, very poorly drained soil in broad interstream areas and in depressions near shallow drainageways. The areas are generally broad and long and range from 10 to 100 acres in size. The larger areas are in the Hofmann, Croatan, and Great Dover Swamp Forests.

Typically, the surface layer is fine sandy loam 15 inches thick. It is black in the upper part and very dark gray in the lower part. The subsoil is 32 inches thick. It is dark gray fine sandy loam in the upper part and grayish brown sandy loam in the lower part. The underlying material to a depth of 72 inches is light brownish gray stratified loamy sand, sandy loam, and sand.

Infiltration is moderate, and surface runoff is slow. The organic matter content is medium. Permeability is moderately rapid, and the available water capacity is medium. The soil is very strongly acid or extremely acid throughout, except where the surface layer has been limed. The water table is at a depth of 0.5 foot to 1.5 feet from December to May.

Included with this soil in mapping is a Torhunta soil with a mucky loam or loam surface layer. Also included are small areas of Pantego, Woodington, and Murville soils. The Woodington and Murville soils are at the outer edges of the mapped areas, and the Pantego soils are intermingled throughout. The included soils make up about 20 percent of this map unit.

If artificially drained, this soil is suited to crops. A small acreage is cultivated. The major crops are corn and soybeans. The seasonal high water table is the main limitation. A well planned and constructed drainage system can lower the water table. Caving of ditchbanks is a problem. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some of the suitable management practices for this soil.

This soil is poorly suited to urban and recreation uses. The seasonal high water table is the main limitation.

Most of the acreage is woodland. The dominant native trees are loblolly pine, pond pine, water tupelo, sweetgum, and American sycamore. Other native trees are water oak, willow oak, red maple, black tupelo, sweetbay, loblollybay, and baldcypress. The use of equipment during wet periods is restricted, and seedling mortality is a limitation.

The capability subclass is IIIw. The woodland group is 2w.

Wo—Woodington fine sandy loam. This is a nearly level, poorly drained soil in broad interstream areas and in shallow depressions near drainageways. Most areas are in the western part of the county. The broad interstream areas range from 200 to 300 acres in size. The areas in shallow depressions near drainageways range from 10 to 25 acres in size.

Typically, the surface layer is very dark gray fine sandy loam 6 inches thick. The subsurface layer is gray fine sandy loam 8 inches thick. The subsoil is gray fine sandy loam 60 inches thick. The underlying material to a depth of 85 inches is light gray sandy clay loam, sandy loam, and clay loam.

Infiltration is moderate, and surface runoff is slow. The organic matter content of the surface layer is medium. Permeability is moderately rapid, and the available water capacity is medium. This soil ranges from extremely acid to strongly acid, except where the surface layer has been limed. The water table is at a depth of 0.5 to 1 foot from December to May.

Included with this soil in mapping are small areas of the Stallings, Rains, and Torhunta soils and a soil that is medium acid to neutral in the lower part of the subsoil. The Stallings soil is near drainageways at the outer edge of the mapped areas. The Torhunta and Rains soils are in small intermingled areas. Also included are a few areas of a soil that has a thin discontinuous hardpan in the subsurface layer. The included soils make up about 15 percent of this map unit.

If artificially drained, this soil is suited to crops. About half of the acreage is in crops, mainly corn and soybeans. The seasonal high water table is the main limitation. A well planned and constructed drainage system helps lower the water table. Caving of ditchbanks is a problem. The addition of plant nutrients, crop residue management, bedding, and the use of cover crops are some of the suitable management practices for this soil.

This soil is poorly suited to most urban uses. The seasonal high water table and the caving of ditchbanks and trench walls are the main limitations for urban uses. This soil is poorly suited to recreation uses. A seasonal high water table is the main limitation.

About half of the acreage of this soil is woodland. The dominant native trees are loblolly pine, yellow-poplar, American sycamore, and sweetgum. Other native trees are water oak, willow oak, red maple, and redcedar. The use of equipment during wet periods in winter is restricted, and seedling mortality is a limitation.

The capability subclass is IIIw. The woodland group is 3w.

prime farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in Jones County are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in providing the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have soil properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland, or they may be in other uses. They are either used for producing food or fiber or are available for these uses. Urban and built-up land or water areas cannot be considered prime farmland.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not flooded during the growing season. The slope ranges mainly from 0 to 6 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland soils if the limitations are overcome by drainage, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information on the criteria for prime farmland soils can be obtained at the local office of the Soil Conservation Service.

prime farmland in Jones County

About 35,600 acres, or about 12 percent of Jones County, is prime farmland. The soils are mainly in broad interstream areas north and south of the Trent River. Corn, soybeans, and tobacco are the main crops.

The loss of prime farmland soils to other uses puts pressure on marginal land. In Jones County this land is limited by wetness.

The following map units, or soils, make up prime farmland in Jones County. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each map unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed soil map units." This list does not constitute a recommendation for a particular land use.

CrB Craven very fine sandy loam, 1 to 4 percent slopes
ExA Exum very fine sandy loam, 0 to 2 percent slopes
GoA Goldsboro loamy sand, 0 to 2 percent slopes
Jo Johns fine sandy loam
KaA Kalmia loamy sand, 0 to 3 percent slopes
NoB Norfolk loamy sand, 1 to 4 percent slopes
On Onslow fine sandy loam

additional important farmland

Some soils are of local or statewide importance for the production of food, feed, fiber, forage, and oilseed crops. The following map units, or soils, have been identified as having such importance by local or state agricultural agents.

AuB Autryville loamy fine sand, 0 to 4 percent slopes
Ba Bayboro loam
CrC Craven very fine sandy loam, 4 to 8 percent slopes
Gr Grantham loam
Gt Grifton fine sandy loam
KeA Kenansville loamy fine sand, 0 to 3 percent slopes
La Leaf silt loam
Le Lenoir loam
Ly Lynchburg fine sandy loam
MaC Marvyn loamy sand, 6 to 15 percent slopes
Me Meggett loam
Na Nahunta loam
Pa Pactolus loamy fine sand
Pn Pantego loam

Ra Rains fine sandy loam
St Stallings loamy fine sand
Sx Stockade fine sandy loam
To Torhunta fine sandy loam
Wo Woodington fine sandy loam

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where marl, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

Tony R. Short, district conservationist, Trenton, N.C., and Foy D. Hendrix, conservation agronomist, Raleigh, N.C., Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Over 52,000 acres in Jones County was used for crops and pasture in 1977, according to the 1978 North Carolina Land Utilization Survey. Of this total, 47,869 acres was used for row crops, 2,140 acres was used for pasture and hay, and 2,804 acres was idle.

Although the soils vary in their suitability for specific crops and require different kinds of management, some management practices are needed on most soils used for crops and pasture.

In Jones County, wetness is a problem on about 83 percent of the acreage suitable for farming. Only limited practices, for example, surface and subsurface drainage, are needed on the moderately well drained, nearly level Craven soils and the Exum and Goldsboro soils. If excess water is removed by surface drainage, subsurface drainage, or both, crops grow well on most of the somewhat poorly drained, poorly drained, and very poorly drained soils. Land smoothing is also needed in some areas (fig. 6).

Surface drainage ranges from large, open ditches to small, shallow furrows between row crops. The large, open ditches commonly provide the outlets for the discharged water.

The design of drainage systems varies with the kind of soil. Subsurface drainage is not as effective on the clayey, slowly permeable Craven, Bayboro, Leaf, Lenoir, and Meggett soils as on the more loamy soils in the county. Open ditches on the Stallings, Johns, Pactolus, Leon, and Woodington soils are susceptible to caving and filling. Sloping the ditchbanks and seeding with permanent grass will help stabilize the banks.

Parallel ditches are commonly used to drain cropland in broad, flat areas where the soils have a surface layer that is high in content of organic matter. These soils are the Bayboro, Croatan, Murville, Pantego, Stockade, and Torhunta soils (fig. 7). The ditches are spaced about 330 feet apart. The area between the ditches is crowned in the middle to facilitate surface runoff. Water furrows, or hoedrains, are used to carry the surface water to the parallel ditches. Where these furrows outlet into the open ditches, drop structures are usually needed to prevent the ditchbank from washing away.

Figure 6.—Land smoothing on Craven very fine sandy loam, 1 to 4 percent slopes.

Land grading is used to fill in low areas or depressions, smooth fields, and make a uniform grade for removing rainwater.

Control of water and wind erosion is needed on some of the soils in Jones County. Water erosion is a hazard on the gently sloping to sloping Craven, Kalmia, Marvyn, and Norfolk soils. Diversions, grassed waterways, field borders, conservation tillage (fig. 8), crop residue, close-growing crops, and, on some soils, a permanent vegetative cover help to control erosion. A combination of these practices is usually needed to control water erosion if tobacco, corn, or soybeans are grown. Reducing erosion helps improve crop production and water quality and lowers the loss of nutrients.

Alpin, Autryville, and Kenansville soils are susceptible to wind erosion. These soils are droughty and subject to leaching of plant nutrients. Leaving crop residue on the surface or growing a cover crop until planting time effectively conserves moisture and reduces leaching of nutrients. Leaving strips of small grain between rows of corn or tobacco will reduce sand blowing on newly planted fields.

Corn, soybeans, tobacco, and grapes are the chief crops on soils susceptible to wind erosion. Coastal bermudagrass is well adapted for hay and pasture on well drained soils.

In most areas the soils are naturally acid and low in content of plant nutrients, and additions of lime and fertilizer are needed. Such additions should be based on the results of soil tests, the needs of the crop, and the expected level of production.

The surface layer of light-colored soils contains low to moderate amounts of organic matter. Crop residue can be incorporated into the soils or kept near the surface by using chisels, cultivators, or light disking. If crops that produce little residue are grown, for example, soybeans, the cropping system needs cover crops, sod crops, or both. Maintaining the organic matter content helps insure good soil structure and tilth.

The major row crops that are suited to the soils and climate of the survey area are corn, soybeans, and tobacco. Corn and soybeans are commonly grown on the Pantego, Torhunta, Bayboro, and Croatan soils that have been artificially drained. Tobacco is grown on soils

that have good natural drainage, for example, Goldsboro, Craven, and Exum soils.

Many soils are suited to vegetable crops. Information and suggestions for growing special crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local

Figure 7.—An undrained area of Torhunta fine sandy loam.

Figure 8.—Soybeans being planted in wheat stubble on Craven very fine sandy loam, 1 to 4 percent slopes.

office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only

class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

By Edwin J. Young, forester, Soil Conservation Service, Raleigh, N.C.

Commercial forest covers 76 percent of the survey area. It is made up of six forest types: longleaf pine, 9,131 acres; loblolly-shortleaf pine, 118,876 acres; oak-pine, 22,884 acres; oak-hickory, 30,857 acres; oak-gum-cypress, 35,635 acres; and elm-ash-cottonwood, 14,484 acres.

The ownership of commercial forest land in 1979 was as follows: national forest, 39,074 acres; other federal forest land, 550 acres; state, 27,000 acres; forest industry, 53,383 acres; farmer, 79,662 acres; and corporate and private ownership, 33,958 acres (*7*).

Forests (fig. 9) provide wood products, scenic beauty, wildlife habitat, and opportunities for outdoor recreation and nature study. They help protect water quality, control erosion and sedimentation, and abate noise.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil, and *s* indicates sandy texture. The letter *o* indicates that limitations or restrictions are insignificant.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is

the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index was determined at age 30 years for eastern cottonwood and at age 50 years for all other species. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

Figure 9.—A forest of loblolly pine. The soil is Lenoir loam.

recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm and is not dusty when dry. Strong slopes can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is firm after rains and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes.

wildlife habitat

John P. Edwards, biologist, Soil Conservation Service, Raleigh, N.C. helped prepare this section.

Wildlife is related to soils though an indirect relationship with plants. Wildlife species are associated with types of plant communities, which, in turn, are directly related to particular kinds of soils. Proper management of soil, water, and plants to produce suitable habitat effectively maintains and improves wildlife populations.

The soils of Jones County produce a wide variety of plants that provide food, cover, and protection for wildlife. Upland species, for example, squirrel, rabbit, quail, mourning dove, fox, and songbirds, are abundant throughout the county. Furbearers, for example, raccoon, muskrat, mink, and opossum, are also abundant. Waterfowl, for example, mallard, black duck, and wood duck, frequent the Trent and White Oak Rivers and their tributaries.

The wildlife habitat in Jones County, is highly varied. It varies primarily because of the different types of landforms and land uses.

In some areas there are many small farms, and wooded areas and crop fields are relatively small and intermixed. The edges of fields provide abundant habitat. In addition there are numerous ditches bordered by shrubs and trees, and there are several abandoned fields. These areas provide excellent habitat for all wildlife and are particularly abundant around Trenton. Kenansville, Kalmia, and Johns soils are dominant in these areas.

The Great Dover Pocosin area is characterized by large farmed fields. Woodland has been converted to cropland at a very rapid pace, thus eliminating many areas used by wildlife for escape, resting, and nesting. Wildlife habitat management plans are needed in these areas. Field borders, minimum tillage, crop residue, field windbreaks, and maintenance of hardwood corridors can help maintain the existing wildlife habitat. The dominant soils in these areas are Pantego, Torhunta, and Bayboro soils and Croatan muck.

In the Combs Forks area in the western part of the county, timber management is carried out on a large scale. This area provides excellent wildlife habitat. The reforestation of loblolly pine is the dominant element of woodland management. In most of this area, however, hardwood shelterbelts or corridors are maintained along natural drainage patterns. The Woodington and Stallings

soils are dominant in this area. Muckalee, Rains, Goldsboro, and Lynchburg soils are also present.

The Croatan National Forest covers a large area in the eastern part of the county. Catfish Lake is in this area. The Croatan soil is dominant, and there are smaller areas of Pantego, Torhunta, and Bayboro soils. The wildlife habitat in this area is poor to fair. The area west of Catfish Lake had been cleared and farmed. The area now consists of large, abandoned, overgrown fields, some of which have been recently planted to loblolly pine. The edges of these fields provide abundant wildlife habitat.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, barley, sorghum, millet, buckwheat, soybeans, cowpeas, and sunflowers.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue (fig. 10), lovegrass, switchgrass, clover, trefoil, and crownvetch.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are goldenrod, beggarweed, partridgepea, and pokeweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, sweetbay, redbay, dogwood, hickory, and titi. An example of a fruit-producing shrub that is suitable for planting on soils rated *good* is autumn-olive.

Coniferous plants furnish browse, seeds, and cones. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, and slope. Examples of wetland plants are smartweed, wild millet, cutgrass, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are wetness, slope, and permeability. Examples of shallow water areas are beaver ponds, woodland duck ponds, and duck fields.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, lawns, and idle areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, mourning dove, cottontail, and red fox and many species of songbirds.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include woodpeckers, squirrels, and gray fox.

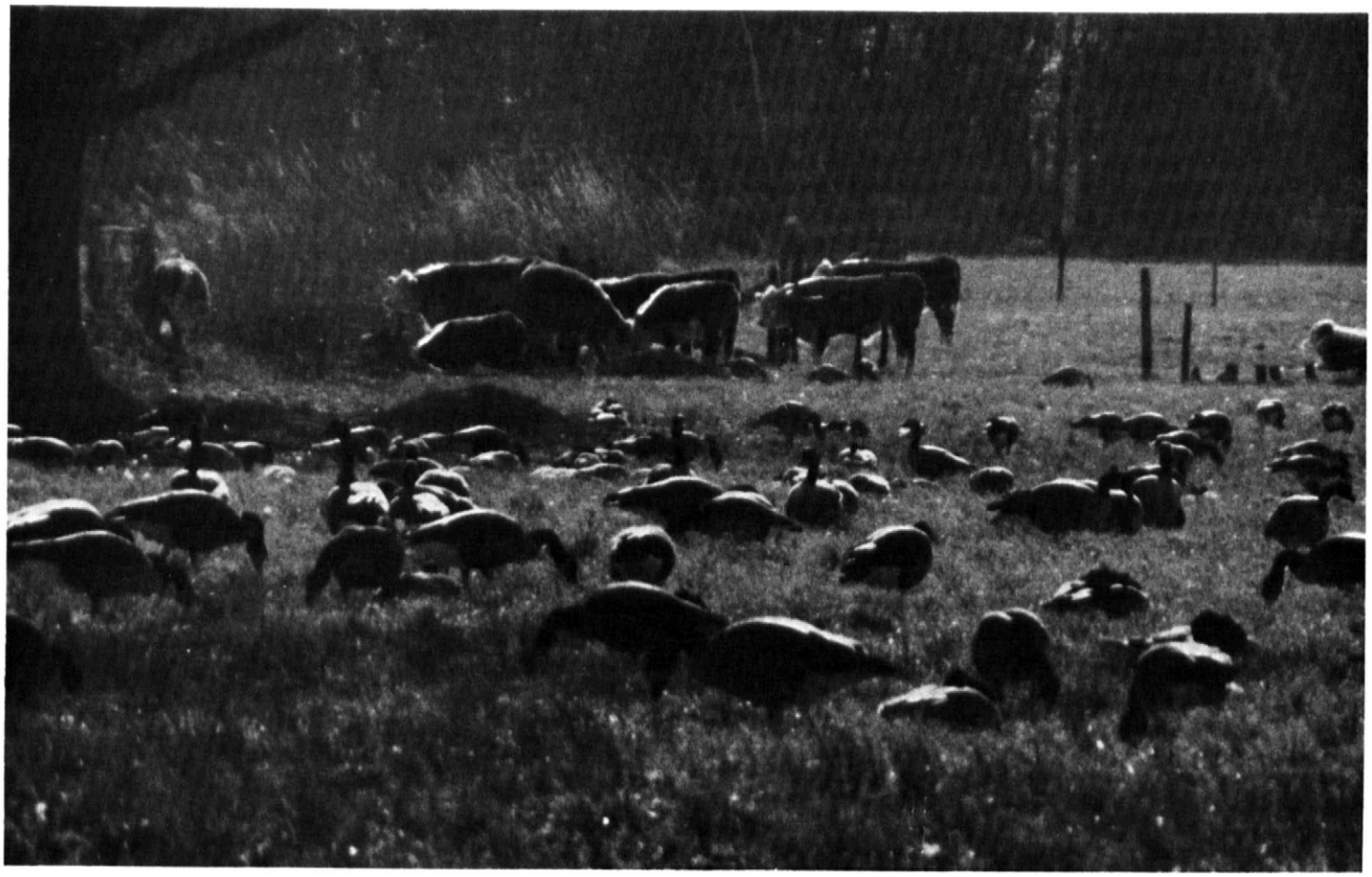

Figure 10.—Canada geese browsing in fescue on Nahunta loam.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are muskrat, raccoon, redwing blackbirds, and various species of ducks.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt

fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to hard marl, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to hard marl or to a cemented pan, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to hard marl or to a cemented pan, a high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, depth to hard marl or to a cemented pan, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site

features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to hard marl or to a cemented pan, and flooding affect absorption of the effluent. A cemented pan or hard marl interferes with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to hard marl or to a cemented pan, flooding, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, hard marl, and cemented pans can cause construction problems.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to hard marl or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, highly organic layers, and soil reaction affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over hard marl, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

construction materials

Table 12 gives information about the soils as a source of roadfill, sand, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil

layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by a high water table and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand. They have at least 5 feet of suitable material, low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential and slopes of 15 to 25 percent. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand is a natural aggregate suitable for commercial use with a minimum of processing. Sand is used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand are gradation of grain sizes (as indicated by the engineering classification of the soil) and the thickness of suitable material. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or a layer of sand that is up to 12 percent silty fines. This material must be at least 3 feet thick. All other soils are rated as an improbable source. Coarse fragments of marl are not considered to be sand.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, hard marl, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured hard marl or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment

can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to hard marl affects the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to hard marl, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by depth to hard marl or to a cemented pan, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, and depth to hard marl or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness, slope, and depth to hard marl or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 17.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 17.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter of the plow layer is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the

soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table, the kind of water table, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than a month is not indicated in table 16.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

engineering index test data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey

area. The pedons are typical of the series and are described in the section "Soil series and their morphology." The soil samples were tested by the North Carolina Department of Transportation and Highway Safety, Materials and Test Unit.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145-73 (AASHTO); Mechanical analysis—T 88 (AASHTO); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); and Shrinkage—T 92 (AASHTO), D 427 (ASTM).

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*8*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquult (*Aqu*, meaning water, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Paleaquults (*Pale*, meaning excessive development, plus *aquult*, the suborder of the Ultisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Paleaquults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, siliceous, thermic Typic Paleaquults.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*6*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*8*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Alpin series

The Alpin series consists of excessively drained soils on stream terraces. The soils formed in coarse textured sediment. Slope ranges from 0 to 6 percent.

Typical pedon of Alpin fine sand, 0 to 6 percent slopes, 0.4 mile northeast of Trenton, 0.2 mile southeast of intersection of State Road 1001 and State Road 1343, east side of State Road 1343:

Ap—0 to 8 inches; brown (10YR 5/3) fine sand; single grained; loose; few large roots; strongly acid; gradual wavy boundary.

A2—8 to 42 inches; yellow (10YR 7/6) fine sand; single grained; loose; few large roots; very strongly acid; gradual wavy boundary.
A2–B2t—42 to 55 inches; yellow (10YR 7/6) fine sand (A2); single grained; loose; common medium distinct bodies of clean sand; few discontinuous strong brown (7.5YR 5/8) loamy fine sand lamellae about one-fourth to 1 inch thick (B2t); very strongly acid; gradual wavy boundary.
C—55 to 80 inches; very pale brown (10YR 7/4) fine sand; few medium faint light gray (10YR 7/2) clean sand bodies; single grained; loose; very strongly acid.

Alpin soils have a sandy horizon 80 or more inches thick and lamellae between depths of 40 and 56 inches that have a cumulative thickness of 1 to 6 inches. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 5 to 8, and chroma of 3 to 6.

The Bt part of the A2–B2t horizon has hue of 10YR, value of 5 to 7, and chroma of 6 to 8 or hue of 7.5YR, value of 5, and chroma of 6 to 8. It is fine sand, loamy fine sand, loamy sand, or sandy loam. Lamellae range from one-fourth inch to 2 inches in thickness. They are separated by an A2 horizon that ranges from 2 to 8 inches in thickness. Most of the sand grains in the B part are coated and weakly bridged with clay.

The C horizon has hue of 10YR, value of 7 or 8, and chroma of 2 to 4. It is sand or fine sand.

Autryville series

The Autryville series consists of well drained soil on uplands. The soils formed in moderately coarse textured sediment. The slope ranges from 0 to 4 percent.

Typical pedon of Autryville loamy fine sand, 0 to 4 percent slopes, 7.8 miles southeast of Maysville, 1.3 miles southwest of the intersection of N.C. Highway 58 and Hill Field Road, 0.4 mile southeast of Hill Field Road and Farm Road, and 100 feet south of Farm Road:

Ap—0 to 7 inches; brown (10YR 5/3) loamy fine sand; weak medium granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.
A2—7 to 27 inches; very pale brown (10YR 7/3) loamy fine sand; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.
B1—27 to 33 inches; yellowish brown (10YR 5/6) fine sandy loam; few fine distinct strong brown mottles; weak fine subangular blocky structure; very friable; strongly acid; gradual wavy boundary.
B2t—33 to 42 inches; brownish yellow (10YR 6/8) fine sandy loam; weak fine subangular blocky structure; very friable and slightly sticky; few fine roots; sand grains are coated and bridged with clay; very strongly acid; clear wavy boundary.
A'2—42 to 51 inches; very pale brown (10YR 7/4) loamy fine sand; few fine faint light gray bodies of clean sand; weak medium granular structure; very friable; strongly acid; clear wavy boundary.
B'1—51 to 62 inches; brownish yellow (10YR 6/8) sandy loam; weak fine subangular blocky structure; very friable; strongly acid; clear wavy boundary.
B'2t—62 to 80 inches; light yellowish brown (10YR 6/4) sandy clay loam; common fine distinct light gray and few fine prominent reddish yellow mottles; weak fine subangular blocky structure; friable; few thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B'3g—80 to 90 inches; light gray (10YR 7/2) sandy clay loam; common medium distinct brownish yellow (10YR 6/8) and few fine prominent reddish yellow mottles; weak fine subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

Autryville soils have bisequal sandy and loamy horizons more than 60 inches thick over stratified sediments. These soils are very strongly acid or strongly acid throughout, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 5, and chroma of 1 to 3. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is sandy clay loam or sandy loam.

The A'2 horizon has hue of 10YR or 2.5YR, value of 6 to 8, and chroma of 2 to 4. It is loamy sand or sand.

The B't horizon has hue of 10YR or 7.5YR, value of 6 through 8, and chroma of 2 through 8. It is sandy loam or sandy clay loam.

Bayboro series

The Bayboro series consists of very poorly drained soils in shallow depressions on uplands. The soils formed in fine textured sediment. The slope is less than 1 percent.

Typical pedon of Bayboro loam, 1.7 miles west of Ten Mile Fork, 1.4 miles west of intersection of State Road 1002 and George Road, and 0.7 mile west of Atla Road and George Road intersection:

A11—0 to 12 inches; black (10YR 2/1) loam; weak medium granular structure; friable; many fine roots; common fine pores; strongly acid; clear wavy boundary.
A12—12 to 14 inches; very dark gray (10YR 3/1) loam; weak medium granular structure; friable; many fine roots; common fine pores; very strongly acid; clear wavy boundary.
B1g—14 to 22 inches; dark gray (10YR 4/1) clay loam; few medium faint gray (10YR 5/1) mottles; weak fine angular blocky structure; friable; common fine roots; common fine pores; very strongly acid; gradual wavy boundary.

B2tg—22 to 42 inches; gray (10YR 5/1) clay; few medium distinct yellowish brown (10YR 5/6) mottles; weak fine angular blocky structure; firm, sticky, and plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B3g—42 to 65 inches; dark gray (10YR 4/1) sandy clay; few medium distinct gray (10YR 6/1) and strong brown (7.5YR 5/8) mottles; massive; firm, sticky, and plastic; thin clay films on sides of root channels; very strongly acid; gradual wavy boundary.
Cg—65 to 80 inches; gray (10YR 6/1) sandy clay loam with lenses of sandy clay; few medium distinct brownish yellow (10YR 6/6) mottles; massive; firm, sticky, and plastic; very strongly acid.

The Bayboro soils have a loamy A horizon and a clayey B horizon more than 60 inches thick over stratified sediment. The soils are very strongly acid or strongly acid, unless limed.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The B horizon has hue of 10YR, value of 4 through 6, and chroma of 1 or 2. It is clay loam, clay, or sandy clay.

The C horizon is stratified of sandy clay loam and sandy clay.

Craven series

The Craven series consists of moderately well drained soils on uplands. The soils formed in fine textured sediment. Slope ranges from 1 to 8 percent.

Typical pedon of Craven very fine sandy loam, 1 to 4 percent slopes, 1 mile east of Oliver Crossroads, 100 feet east of intersection of State Road 1120 and N.C. Highway 58, on north side of N.C. Highway 58:

Ap—0 to 7 inches; grayish brown (10YR 5/2) very fine sandy loam; weak medium granular structure; very friable; few fine roots; strongly acid; abrupt smooth boundary.
A2—7 to 10 inches; pale brown (10YR 6/3) loam; weak medium granular structure; friable; few fine roots; strongly acid; clear wavy boundary.
B1—10 to 14 inches; brownish yellow (10YR 6/6) clay loam; weak fine subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.
B21t—14 to 28 inches; brownish yellow (10YR 6/6) clay; few medium distinct strong brown (7.5YR 5/6) mottles; moderate fine angular blocky structure; very firm, sticky and very plastic; few fine roots between peds; thin clay films on faces of peds; very strongly acid; gradual wavy boundary.
B22t—28 to 58 inches; light yellowish brown (10YR 6/4) clay; many coarse distinct gray (10YR 6/1) and common medium prominent red (2.5YR 4/6) mottles; moderate fine angular blocky structure; very firm, sticky and very plastic; thin clay films on faces of peds and pores; very strongly acid; gradual wavy boundary.
C—58 to 80 inches; very pale brown (10YR 7/4) sandy loam with lenses of loamy sand and sandy clay; common coarse distinct light gray (10YR 7/1) and few medium distinct yellowish red (5YR 4/8) mottles; massive; friable, slightly sticky and slightly plastic; few fine flakes of mica and soft mineral grains; very strongly acid.

The Craven soils have a loamy A horizon and a clayey B horizon that are 50 to 60 inches thick. The soils are very strongly acid or strongly acid, unless limed.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 or 3.

The B horizon in the upper part has hue of 10YR, value of 5 to 7, and chroma of 4 to 8. The B horizon in the lower part has hue of 10YR, value of 5 to 7, and chroma of 1 to 4. In many pedons the B horizon has few to many mottles of gray, strong brown, yellowish red, and red. The horizon is dominantly clay but includes clay loam and silty clay.

The C horizon has layers of sandy loam, loamy sand, and sandy clay loam.

Croatan series

The Croatan series consists of very poorly drained organic soils on uplands. The soils formed from herbaceous plants. The soils have no well defined natural drainage patterns. The slope is less than 1 percent.

Typical pedon of Croatan muck, 6.1 miles southeast of Maysville in Croatan National Forest, 3.9 miles east of intersection of N.C. Highway 58 and State Road 1105, 3.3 miles northeast of intersection of State Road 1105 and Mirey Branch Road, 0.9 mile north of intersection of Stewart Road and USFS 606A, and 50 feet east of the culvert over canal, in woods:

Oa1—0 to 9 inches; black (N2/0 broken face and rubbed) sapric material; about 8 percent fibers unrubbed and 2 percent rubbed; moderate fine granular structure; very friable; common fine and medium roots; common grains of clean sand; about 95 percent organic material; very strongly acid; gradual wavy boundary.
Oa2—9 to 15 inches; black (N2/0 broken face and rubbed) sapric material; about 5 percent fibers unrubbed and 1 percent rubbed; weak medium granular structure; very friable; few fine and medium roots; few grains of clean sand; about 90 percent organic material; extremely acid; gradual wavy boundary.
Oa3—15 to 28 inches; black (10YR 2/1 broken face; N2/0 rubbed); sapric material; about 5 percent fibers unrubbed, less than 1 percent rubbed; massive; very friable; few fine roots; few grains of clean sand;

about 75 percent organic material; extremely acid; diffuse wavy boundary.

IIA1g—28 to 33 inches; black (5YR 2/1) mucky sandy loam; massive; very friable; few fine and medium roots; about 80 percent mineral material; extremely acid; gradual wavy boundary.

IIC1g—33 to 38 inches; dark brown (7.5YR 3/2) sandy loam; massive; very friable; few nearly decomposed medium roots; extremely acid; gradual wavy boundary.

IIC2g—38 to 60 inches; grayish brown (10YR 5/2) sandy clay loam; massive; slightly sticky and slightly plastic; few nearly decomposed medium roots; extremely acid; gradual smooth boundary.

IIC3g—60 to 80 inches; mottled grayish brown (10YR 5/2) and dark gray (10YR 4/1) loamy sand; massive; very friable; extremely acid.

The organic material is commonly 16 to 35 inches thick but ranges to 51 inches in thickness. It is extremely acid. The underlying mineral horizons are extremely acid to slightly acid. Logs, stumps, and fragments of wood compose up to 10 percent of the organic layers. The fiber content of the organic tiers is 3 to 30 percent unrubbed and less than 10 percent rubbed. Charcoal particles and pockets of ash occur in some pedons.

The organic horizons have hue of 7.5YR to 5Y, value of 2 or 3, and chroma of 0 to 2. After several years of drainage and cultivation, a granular or blocky structure develops in all or part of the organic layers, depending upon the nature and depth of the organic material as well as the duration of drainage.

Consistency of moist soil is very friable or friable and that of wet soil is slightly sticky or sticky (non-colloidal). In undrained areas the organic horizons in the root zone have weak to moderate granular or blocky structure. Below the root zone the organic material is usually massive.

The upper 12 inches or more of the underlying mineral layers have a loamy texture. Some pedons have thin strata of sand or loamy sand. The upper layers commonly have hue of 5YR to 5Y, value of 2 to 6, and chroma of 1 to 3. The lower mineral horizons are similar in color to the upper mineral horizons but range to greenish gray or dark greenish gray. They vary in texture from sand to clay.

Exum series

The Exum series consists of moderately well drained soils on uplands. The soils formed in medium textured sediment. The slope ranges from 0 to 2 percent.

Typical pedon of Exum very fine sandy loam, 0 to 2 percent slopes, 1 mile east of Pollocksville, 0.1 mile southeast of intersection of State Road 1004 and State Road 1110, and 50 feet east of State Road 1110:

Ap—0 to 7 inches; grayish brown (10YR 5/2) very fine sandy loam; weak medium granular structure; very friable; common fine roots; medium acid; abrupt smooth boundary.

A2—7 to 11 inches; pale brown (10YR 6/3) very fine sandy loam; weak medium granular structure; very friable; common fine roots; medium acid; clear wavy boundary.

B1—11 to 14 inches; light yellowish brown (10YR 6/4) loam; weak fine subangular blocky structure; friable; common fine roots; many fine pores; strongly acid; clear wavy boundary.

B21t—14 to 26 inches; brownish yellow (10YR 6/6) clay loam; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; common fine roots; many fine pores; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—26 to 45 inches; pale brown (10YR 6/3) clay loam; common medium distinct yellowish brown (10YR 5/8) and few fine distinct light gray mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; many fine pores; thin patchy clay films on faces of peds and in pores; very strongly acid; gradual wavy boundary.

B3g—45 to 62 inches; light gray (10YR 7/2) clay loam; common coarse distinct brownish yellow (10YR 6/8) mottles; weak fine subangular blocky structure; friable, slightly sticky and slightly plastic; thin patchy clay films on faces of peds and in pores; very strongly acid; gradual wavy boundary.

Cg—62 to 80 inches; light gray (10YR 7/2) stratified loamy sand, sandy clay loam, and sandy loam; common coarse distinct yellowish brown (10YR 5/8) mottles; massive; friable, slightly sticky and slightly plastic; very strongly acid.

The Exum soils have a loamy A horizon and a fine-silty Bt horizon more than 60 inches thick over stratified sediment. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 2 to 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 8. Gray mottles are within 30 inches of the surface. The B3 horizon, if present, has hue of 10YR, value of 6 or 7, and chroma of 1 to 3. The B horizon is loam or clay loam.

The C horizon is stratified loam, loamy sand, sandy clay loam, and sandy loam.

Goldsboro series

The Goldsboro series consists of moderately well drained soils on uplands. The soils formed in moderately fine textured sediment. The slope ranges from 0 to 2 percent.

Typical pedon of Goldsboro loamy sand, 0 to 2 percent slopes, 3.4 miles southwest of Trenton, 1.4 miles south of intersection of State Road 1123 and State Road 1124, and 70 feet east of State Road 1123:

Ap—0 to 8 inches; grayish brown (10YR 5/2) loamy sand; weak medium granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.
A2—8 to 14 inches; light brownish gray (10YR 6/2) loamy sand; weak medium granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.
B1—14 to 17 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine subangular blocky structure; very friable; many fine roots; strongly acid; clear wavy boundary.
B21t—17 to 24 inches; brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; common fine roots; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B22t—24 to 38 inches; light yellowish brown (10YR 6/4) sandy clay loam; common medium distinct gray (10YR 6/1) and strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B23tg—38 to 56 inches; gray (10YR 6/1) sandy clay and pockets of sandy clay loam; common medium prominent red (2.5YR 5/8) and common medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B3g—56 to 72 inches; gray (10YR 6/1) sandy clay loam and thin strata of sandy loam; common fine faint brownish yellow mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; very strongly acid; gradual wavy boundary.
Cg—72 to 80 inches; gray (10YR 6/1) sandy loam and thin strata of loamy sand and sandy clay loam; massive; friable, slightly sticky, and slightly plastic; extremely acid.

Goldsboro soils have a sandy A horizon and a fine-loamy Bt horizon more than 60 inches thick over stratified sediment. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 2 to 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. Gray mottles are within 20 to 30 inches of the surface. The Bt horizon is sandy clay loam or sandy loam in the upper part and sandy clay loam or sandy clay in the lower part. The lower part of the Bt horizon and the B3 horizon have hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

The Cg horizon is stratified sandy loam, loamy sand, and sandy clay loam.

Grantham series

The Grantham series consists of poorly drained soils on uplands. The soils formed in medium textured sediment. The slope is less than 1 percent.

Typical pedon of Grantham loam, 1.1 miles south of Pollocksville, 0.7 mile south of the intersection of N.C. Highway 58 and U.S. Highway 17, and 50 feet east of U.S. Highway 17:

Ap—0 to 9 inches; dark gray (10YR 4/1) loam; weak medium granular structure; very friable; common fine roots; neutral; abrupt smooth boundary.
A2g—9 to 13 inches; gray (10YR 6/1) loam; common medium distinct dark gray (10YR 4/1) mottles; weak medium granular structure; very friable; common fine roots; strongly acid; clear wavy boundary.
B21tg—13 to 17 inches; light brownish gray (10YR 6/2) clay loam; few fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; few fine roots; very strongly acid; gradual wavy boundary.
B22tg—17 to 47 inches; light brownish gray (10YR 6/2) clay loam; few fine distinct brownish yellow mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B23tg—47 to 68 inches; light gray (10YR 7/1) clay loam; few medium distinct brownish yellow (10YR 6/8) and strong brown (7.5YR 5/6) and few fine faint greenish gray mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B3g—68 to 80 inches; light gray (10YR 7/1) clay loam and strata of clay; few medium distinct brownish yellow (10YR 6/8), greenish gray (5GY 6/1), and strong brown (7.5YR 5/8) mottles; massive; firm, sticky, and plastic; very strongly acid.

Grantham soils have a loamy A horizon and a fine-silty Bt horizon more than 60 inches thick over stratified sediment. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has few to many mottles in shades of yellow, brown, and red. The B horizon is loam, clay loam, or silty clay loam.

Grifton series

The Grifton series consists of poorly drained soils on uplands. The soils formed in moderately fine textured sediments mixed in soft marl. The slope is less than 2 percent.

Typical pedon of Grifton fine sandy loam, 2.6 miles west of Phillips Crossroads, 50 feet southeast of intersection of State Road 1159 and State Road 1158, and 50 feet south of State Road 1158:

Ap—0 to 8 inches; dark gray (10YR 4/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.
A2—8 to 11 inches; gray (10YR 6/1) sandy loam; few medium distinct yellowish brown (10YR 5/4) mottles; weak medium granular structure; very friable; common fine roots; slightly acid; clear wavy boundary.
B1g—11 to 19 inches; gray (10YR 5/1) sandy loam; few medium distinct yellowish brown (10YR 5/4) mottles; weak fine subangular blocky structure; very friable; common fine roots; neutral; clear wavy boundary.
B2tg—19 to 50 inches; gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; mildly alkaline; clear wavy boundary.
B3g—50 to 60 inches; gray (10YR 6/1) sandy loam and thin lenses of sandy clay; common coarse distinct strong brown (7.5YR 5/8) mottles; massive; friable, slightly sticky, and slightly plastic; 3 percent concretions; moderately alkaline; clear wavy boundary.
IICg—60 to 80 inches; light bluish gray (5B 7/1) soft marl that crushes to sandy clay loam, sand, and sandy clay; many coarse faint greenish gray (5GY 5/1) mottles; massive; friable; moderately alkaline.

Grifton soils have loamy horizons 40 to 70 inches thick over soft marl. The A horizon is strongly acid unless limed. The B and C horizons range from neutral to moderately alkaline.

The Ap or A1 horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. In pedons where the Ap or A1 horizon has color value of 3, it is less than 7 inches thick.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Brownish mottles are common. This horizon is sandy clay loam or sandy loam.

The C horizon is sandy loam with thin lenses of sandy clay loam or clay. The lower part of the B horizon and the C horizon may contain fragments of friable to hard marl and iron and manganese concretions.

Hobonny series

The Hobonny series consists of very poorly drained soils on low flood plains. The soils formed in plant residue deposited over coarse textured mineral sediment. The slope is less than 1 percent.

Typical pedon of Hobonny muck, 8 miles southeast of Maysville and 2.3 miles southwest of intersection of N.C. Highway 58 and Haywood Road, near Long Landing:

Oa1—0 to 10 inches; black (5YR 2/1) muck; 35 percent fiber, about 15 percent rubbed; massive; many medium roots; about 25 percent silt and fine sand; strongly acid; gradual wavy boundary.
Oa2—10 to 60 inches; black (5YR 2/1) muck; 20 percent fiber, about 5 percent rubbed; massive; common fine roots; about 20 percent silt and fine sand; medium acid; clear smooth boundary.
IIC—60 to 70 inches; black (5YR 2/1) mucky silt loam mixed with sand; massive; friable; many clean sand grains; strongly acid.

Hobonny soils have decomposed organic layers ranging from 51 to 85 inches in thickness. Reaction is very strongly acid to medium acid.

The surface and subsurface organic layers have hue of 5YR or 10YR, value of 2 or 3, and chroma of 1 or 2; they have few to common clean sand grains.

The underlying mineral material ranges from sand to fine sandy loam and mucky silt loam mixed with sand.

Johns series

The Johns series consists of somewhat poorly drained and moderately well drained soils on stream terraces. The soils formed in moderately fine textured sediment. The slope ranges from 0 to 2 percent.

Typical pedon of Johns fine sandy loam, 3.8 miles west of Trenton, 0.7 mile west of intersection of N.C. Highway 58 and N.C. Highway 41, 500 feet north of N.C. Highway 58, and 50 feet north of farm path:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.
B1—9 to 18 inches; brown (10YR 5/3) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; strongly acid; clear wavy boundary.
B21t—18 to 26 inches; yellowish brown (10YR 5/4) sandy clay loam; few fine distinct gray and brownish yellow mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds and in pores; strongly acid; clear wavy boundary.
B22t—26 to 38 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium and coarse distinct gray (10YR 6/1) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.
IICg—38 to 65 inches; gray (10YR 6/1) sand; few medium distinct yellowish brown (10YR 5/6) mottles; single grained; loose; very strongly acid.

Johns soils have loamy horizons 35 to 40 inches thick over stratified sandy sediment. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. In pedons where the Ap or A1 horizon has color value of 3, it is less than 6 inches thick. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. It contains few to common mottles in chroma of 2 or less, or it is mottled gray and brown in the lower part. The B3 horizon, if present, has hue of 10YR, value of 5 or 6, and chroma of 1 to 4. The B horizon is sandy clay loam or sandy loam.

The IIC horizon has hue of 10YR or 5Y, value of 5 to 7, and chroma of 1. It is sand or loamy sand.

Kalmia series

The Kalmia series consists of well drained soils on stream terraces. The soils formed in moderately fine textured sediment. The slope ranges from 0 to 3 percent.

Typical pedon of Kalmia loamy sand, 0 to 3 percent slopes, 3.8 miles west of Trenton, 0.7 mile west of intersection of N.C. Highway 41 and N.C. Highway 58, and 100 feet south of N.C. Highway 58:

Ap—0 to 9 inches; brown (10YR 5/3) loamy sand; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.

B1—9 to 16 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; friable; few fine roots; strongly acid; clear wavy boundary.

B2t—16 to 35 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; strongly acid; clear wavy boundary.

B3—35 to 38 inches; yellowish brown (10YR 5/8) sandy loam; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; strongly acid; gradual wavy boundary.

IIC—38 to 65 inches; light gray (10YR 7/2) sand; few coarse distinct brownish yellow (10YR 6/6) mottles; single grained; loose; very strongly acid.

Kalmia soils have a sandy A horizon and a loamy Bt horizon 26 to 40 inches thick over stratified sandy sediment. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. The A2 horizon, if present, has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. The B3 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8. The B horizon is sandy loam or loamy sand.

The IIC horizon is sand or loamy sand.

Kenansville series

The Kenansville series consists of well drained soils on stream terraces. The soils formed in moderately coarse textured alluvium. The slope ranges from 0 to 3 percent.

Typical pedon of Kenansville loamy fine sand, 0 to 3 percent slopes, 2.4 miles northeast of Oliver Crossroads, 0.6 mile west of Trent River Bridge on State Road 1121, 0.2 mile north of State Road 1121 and field road intersection, and 50 feet east of field road:

Ap—0 to 7 inches; grayish brown (10YR 5/2) loamy fine sand; weak medium granular structure; very friable; few fine roots; medium acid; abrupt smooth boundary.

A2—7 to 27 inches; pale brown (10YR 6/3) loamy fine sand; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

B2t—27 to 36 inches; yellowish brown (10YR 5/8) fine sandy loam; weak fine subangular blocky structure; friable; many fine roots; thin clay coating and bridging between grains; strongly acid; clear wavy boundary.

B3—36 to 48 inches; yellowish brown (10YR 5/8) loamy fine sand; weak medium granular structure; very friable; strongly acid; clear wavy boundary.

C—48 to 60 inches; very pale brown (10YR 7/3) sand; single grained; loose; strongly acid.

Kenansville soils have a sandy A horizon 20 to 30 inches thick over a loamy Bt horizon that extends to a depth of 40 to 56 inches. The Bt horizon is underlain by sandy sediment. These soils are very strongly acid to medium acid, unless limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is fine sandy loam or sandy loam.

The C horizon is loamy sand or sand.

Leaf series

The Leaf series consists of poorly drained soils on broad uplands. The soils formed in fine textured sediment. The slope is less than 1 percent.

Typical pedon of Leaf silt loam, 2.7 miles southeast of Trenton, 0.4 mile west of intersection of State Road 1327 and N.C. Highway 58, and 50 feet north of N.C. Highway 58, in a field:

Ap—0 to 8 inches; dark gray (10YR 4/1) silt loam; weak medium granular structure; friable; few fine roots; slightly acid; abrupt smooth boundary.

A2—8 to 11 inches; light brownish gray (10YR 6/2) silt loam; few medium distinct brownish yellow (10YR 6/6) mottles; weak medium granular structure; friable; few fine roots; Ap material commonly in old root channels; very strongly acid; abrupt wavy boundary.
B21tg—11 to 40 inches; light brownish gray (10YR 6/2) clay; common medium distinct brownish yellow (10YR 6/6) mottles; moderate fine angular blocky structure; firm, sticky and very plastic; thin clay films on faces of peds and in pores; Ap material commonly in old root channels; very strongly acid; gradual wavy boundary.
B22tg—40 to 68 inches; light gray (10YR 7/1) clay; few medium distinct brownish yellow (10YR 6/6), few fine prominent reddish yellow, and few coarse distinct gray (10YR 5/1) mottles; moderate fine angular blocky structure; firm, sticky and very plastic; thin clay films on faces of peds and in pores; very strongly acid; gradual wavy boundary.
B3g—68 to 80 inches; gray (5Y 6/1) clay loam; few fine distinct brownish yellow and grayish brown mottles; massive; firm, sticky and very plastic; thin clay films on faces of peds; very strongly acid; gradual wavy boundary.
Cg—80 to 90 inches; light gray (10YR 7/1) loam; few fine distinct brownish yellow and grayish brown mottles; massive; friable, slightly sticky and slightly plastic; very strongly acid.

The Leaf soils have a loamy A horizon and a clayey Bt horizon more than 60 inches thick over stratified sediment. The soils are very strongly acid or strongly acid unless limed.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is dominantly silty clay loam, clay, or silty clay.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 0 to 2. It is stratified loam, clay loam, or sandy clay.

Lenoir series

The Lenoir series consists of somewhat poorly drained soils on broad, smooth uplands. The soils formed in fine textured marine sediment. The slope ranges from 0 to 2 percent.

Typical pedon of Lenoir loam, 3.0 miles east of Trenton, 100 feet northeast of intersection of State Road 1122 and N.C. Highway 58, and 100 feet southwest of Maple Grove Church:

Ap—0 to 6 inches; dark gray (10YR 4/1) loam; weak medium granular structure; friable; common fine roots; common fine pores; very strongly acid; clear wavy boundary.
A2—6 to 9 inches; light brownish gray (10YR 6/2) loam; weak medium granular structure; friable; few fine roots; common fine pores; very strongly acid; clear smooth boundary.
B1—9 to 15 inches; pale brown (10YR 6/3) clay loam; few fine faint light brownish gray mottles; moderate fine subangular blocky structure; friable; few fine roots; common fine pores; very strongly acid; clear wavy boundary.
B21tg—15 to 26 inches; light brownish gray (10YR 6/2) clay; few fine distinct yellowish brown mottles; weak fine angular blocky structure; very firm, sticky, and very plastic; few fine roots; few fine pores; thin clay films on faces of peds and in pores; very strongly acid; gradual wavy boundary.
B22tg—26 to 54 inches; gray (10YR 6/1) clay; few medium distinct brownish yellow (10YR 6/8) and few medium prominent red mottles; moderate fine angular blocky structure; very firm, sticky, and very plastic; thin clay films on faces of peds and in pores; very strongly acid; gradual wavy boundary.
B3g—54 to 65 inches; gray (10YR 6/1) clay; few fine distinct brownish yellow and few fine prominent red mottles; moderate fine angular blocky structure; very firm, very sticky and very plastic; thin clay films in pores; very strongly acid; gradual wavy boundary.
Cg—65 to 80 inches; gray (10YR 6/1) clay; few fine distinct brownish yellow and strong brown mottles; massive; firm, sticky, and very plastic; very strongly acid.

The Lenoir soils have a loamy A horizon and a clayey Bt horizon more than 60 inches thick over stratified sediment. The soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3.

The B1 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It has few to common mottles in chroma of 2 or less.

The upper part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 6. It has few to common mottles in chroma of 2 or less. The lower part of the Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. The B horizon is clay loam or clay.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It is sandy loam, sandy clay loam, or clay.

Leon series

The Leon series consists of poorly drained soils on broad, smooth uplands. The soils formed in coarse textured sediment. The slope is less than 1 percent.

Typical pedon of Leon sand, 1.2 miles north of Hargetts crossroads, 50 feet east of U.S. Highway 258, and 20 feet north of intersection of U.S. Highway 258 and field road:

A1—0 to 6 inches; very dark gray (10YR 3/1) sand; single grained; loose; about one-third of the sand grains are uncoated; common medium and fine roots; extremely acid; clear wavy boundary.
A2—6 to 15 inches; light gray (10YR 7/1) sand; single grained; loose; very strongly acid; clear wavy boundary.
B21h—15 to 24 inches; dark reddish brown (5YR 3/3) sand; massive; friable; weakly cemented; very strongly acid; gradual wavy boundary.
B22h—24 to 30 inches; dark reddish brown (5YR 3/2) sand; massive; friable; weakly cemented; very strongly acid; clear irregular boundary.
A'2—30 to 35 inches; grayish brown (10YR 5/2) sand; single grained; loose; very strongly acid; gradual wavy boundary.
B'2h—35 to 80 inches; black (5YR 2/1) sand; massive; weakly cemented; very strongly acid.

Leon soils have a sandy texture and are more than 80 inches thick. The soils are extremely acid or very strongly acid, unless limed.

The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1. The A2 horizon has hue of 10YR, value of 6 to 8, and chroma of 1 or 2.

The Bh horizon has hue of 5YR or 10YR, value of 2 or 3, and chroma of 1 to 3.

The A'2 horizon has hue of 10YR to 2.5Y, value of 5 to 7, and chroma of 1 to 3.

The B'h horizon has the same colors as the Bh horizon.

Lynchburg series

The Lynchburg series consists of somewhat poorly drained soils on uplands. The soils formed in moderately fine textured sediment. The slope is less than 1 percent.

Typical pedon of Lynchburg fine sandy loam, 5.4 miles southeast of Trenton, 0.4 mile southwest of Oliver Crossroads, and 50 feet northwest of State Road 1121:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; few fine roots; medium acid; abrupt smooth boundary.
A2—8 to 12 inches; light brownish gray (10YR 6/2) fine sandy loam; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.
B1—12 to 16 inches; pale brown (10YR 6/3) sandy loam; few fine faint light brownish gray mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; few fine roots; very strongly acid; clear wavy boundary.
B21t—16 to 25 inches; mottled light yellowish brown (10YR 6/4), light brownish gray (10YR 6/2), and brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; very friable, slightly sticky, and slightly plastic; few fine roots; many fine pores; thin patchy clay films on faces of peds; very strongly acid; clear wavy boundary.
B22tg—25 to 44 inches; gray (10YR 6/1) sandy clay loam; common medium distinct brownish yellow (10YR 6/8) and common fine distinct strong brown mottles; weak fine subangular blocky structure; very friable, slightly sticky, and slightly plastic; many fine pores; thin patchy clay films on faces of peds; extremely acid; gradual wavy boundary.
B3g—44 to 66 inches; light gray (10YR 7/1) sandy clay loam with thin strata of sandy loam; common medium distinct brownish yellow (10YR 6/6) and few medium prominent light red (2.5YR 6/8) mottles; weak fine subangular blocky structure; very friable, slightly sticky, and slightly plastic; extremely acid; gradual wavy boundary.
Cg—66 to 80 inches; light gray (10YR 7/1) sandy clay loam with thin strata of sandy loam; few fine distinct brownish yellow mottles; massive; friable; very strongly acid.

The Lynchburg soils have loamy horizons more than 60 inches thick over stratified sediment. These soils are acid to strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 2 or 3.

The B1 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It has few to common mottles in chroma of 2 or less. The upper part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It has few to many mottles in chroma of 2 or less. The lower part of the Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has common to many mottles of higher chroma. In some pedons the Bt horizon is mottled in shades of yellow, brown, and gray. The B horizon is sandy clay loam or sandy loam in the upper part and sandy clay loam or sandy clay in the lower part.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 0 to 2. It is stratified sandy loam, sandy clay loam, or clay loam.

Marvyn series

The Marvyn series consists of well drained soils on uplands. The soils formed in moderately fine textured sediment. The slope ranges from 6 to 15 percent.

Typical pedon of Marvyn loamy sand, 6 to 15 percent slopes, 1 mile north of Taylors Corner, 0.7 mile north of intersection of State Road 1142 and Weyerhaeuser farm road, and 100 feet west of Weyerhaeuser farm road:

A1—0 to 3 inches; dark grayish brown (10YR 4/2) loamy sand; weak medium granular structure; very friable; many roots; very strongly acid; clear wavy boundary.
A2—3 to 17 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium granular structure; very

friable; many roots; very strongly acid; clear wavy boundary.
B2t—17 to 48 inches; strong brown (7.5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; few medium roots; very strongly acid; gradual wavy boundary.
C1—48 to 60 inches; reddish yellow (7.5YR 6/8) sandy loam; common fine distinct pale brown and yellowish red mottles; massive; very friable; very strongly acid; gradual wavy boundary.
C2—60 to 70 inches; yellow (10YR 7/8) loamy sand; common medium distinct light gray (10YR 7/2) and reddish yellow (5YR 6/8) mottles; massive; very friable; very strongly acid.

Marvyn soils have loamy horizons 40 to 60 inches thick over stratified sediment. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 through 8. The B3 horizon, if present, has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 2 to 8. The B horizon is sandy loam, sandy clay loam, or loamy sand.

The C horizon has hue of 10YR or 7.5YR, value of 5 to 7, and chroma of 1 through 8. It is sandy loam, loamy sand, sandy clay loam, or clay loam.

Meggett series

The Meggett series consists of poorly drained soils on uplands. The soils formed in fine textured sediment mixed with soft marl. The slope is less than 2 percent.

Typical pedon of Meggett loam, 3.3 miles northwest of Phillips Crossroads, 0.5 mile northeast of intersection of N.C. Highway 58 and State Road 1159, 0.2 mile east of State Road 1159, and 50 feet north of farm road:

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.
B2tg—5 to 38 inches; dark gray (10YR 4/1) sandy clay; common medium distinct brown (7.5YR 4/4) mottles; moderate fine angular blocky structure; firm, sticky, and plastic; thin clay films on faces of peds and on pore walls; mildly alkaline; clear wavy boundary.
B3g—38 to 55 inches; gray (10YR 6/1) sandy clay with thin lenses of sandy clay loam; common medium distinct yellowish brown (10YR 5/8) and dark gray (10YR 4/1) mottles; massive; firm, sticky, and plastic; 1 percent black concretions; moderately alkaline; clear wavy boundary.
IIC1g—55 to 75 inches; grayish green (5G 5/2) sandy loam with strata of sandy clay loam; few medium distinct dark greenish gray (5GY 4/1) and gray (5Y 6/1) mottles; massive; friable; few fragments of marl; moderately alkaline.
IIC2g—75 to 80 inches; grayish green soft marl crushing to sandy clay loam, sandy loam, and sandy clay; massive; friable; moderately alkaline.

The Meggett soils have a loamy A horizon and a clayey B horizon 40 to 60 inches thick over marl and stratified sediment. The A horizon is medium acid unless lime has been added. The B and C horizons are neutral to moderately alkaline.

The Ap or A1 horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. In pedons where the Ap or A1 horizon has color value of 3, the horizon is less than 7 inches thick.

The B2tg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. It is dominantly sandy clay or clay.

The IIC horizon has hue of 5GY or 5G, value of 5 to 7, and chroma of 1 or 2. It is soft marl that crushes to sandy loam and sandy clay.

The lower part of the B horizon and the C horizon contain friable to hard fragments of marl and iron and manganese concretions.

Muckalee series

The Muckalee series consists of poorly drained soils on flood plains. The soils formed in moderately coarse textured recent alluvium. The slope ranges from 0 to 1 percent.

Typical pedon of Muckalee loam, 1 mile northeast of Comfort, 1 mile southwest of intersection of N.C. Highway 41 and State Road 1134, and 50 feet northwest of Cypress Creek bridge:

A11—0 to 8 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; friable; common fine roots; slightly acid; gradual wavy boundary.
A12g—8 to 24 inches; dark gray (10YR 4/1) sandy loam with strata of loam; moderate medium granular structure; friable; few fine roots; slightly acid; gradual wavy boundary.
C1g—24 to 35 inches; mottled gray (10YR 6/1) and grayish brown (10YR 5/2) sandy loam with strata of loamy sand; massive; friable; neutral; gradual wavy boundary.
C2g—35 to 65 inches; greenish gray (5GY 6/1) loamy sand with strata of sandy clay; massive; friable; mildly alkaline.

The Muckalee soils have loamy horizons 30 inches or more thick. The soils are medium acid to neutral in the A horizon and medium acid to mildly alkaline in the 10- to 40-inch control section.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. In pedons where the A horizon has color value of 3, it is less than 6 inches thick.

The C horizon has hue of 10YR or 5Y, value of 4 to 7, and chroma of 1 or 2. It is commonly sandy loam with fragments of marl in the lower part of the horizon. Its texture, however, includes sand, loamy sand, loam, fine sandy loam, and thin layers of sandy clay loam.

Murville series

The Murville series consists of very poorly drained soils in depressions on uplands and in some small areas on terraces. The soils formed in coarse textured sediment. The slope is less than 1 percent.

Typical pedon of Murville fine sand, 2.9 miles north of intersection of N.C. Highway 41 and State Road 1146, 0.4 mile northeast of State Road 1146 and logging road, and 20 feet south of logging road:

A1—0 to 10 inches; black (10YR 2/1) fine sand; weak medium granular structure; very friable; common medium and fine roots; extremely acid; gradual wavy boundary.

B21h—10 to 30 inches; black (10YR 2/1) sand; massive; very friable; few large roots; sand grains are coated with organic matter and feel loamy; extremely acid; gradual wavy boundary.

B22h—30 to 50 inches; dark reddish brown (5YR 3/2) sand; massive; very weakly cemented; sand grains are coated and bridged with organic matter and feel loamy; very strongly acid; gradual wavy boundary.

C—50 to 72 inches; brown (10YR 5/3) sand; single grained; loose; very strongly acid.

The Murville soils have sandy horizons 72 inches or more thick. They are strongly acid to extremely acid, unless limed.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The B2h horizon has hue of 10YR or 5YR, value of 2 or 3, and chroma of 1 or 2. Sand grains are coated with organic matter and feel loamy.

The C horizon is brown to light gray sand or loamy sand.

Nahunta series

The Nahunta series consists of somewhat poorly drained soils on uplands. The soils formed in medium textured sediment. The slope ranges from 0 to 2 percent.

Typical pedon of Nahunta loam, 1 mile southwest of Pollocksville, 0.2 mile northwest of intersection of State Road 1338 and N.C. Highway 58, and 25 feet north of State Road 1338:

Ap—0 to 7 inches; dark gray (10YR 4/1) loam; weak medium granular structure; very friable; common fine roots; medium acid; abrupt smooth boundary.

A2—7 to 12 inches; pale brown (10YR 6/3) loam; weak medium granular structure; very friable; common fine roots; many fine pores; medium acid; clear wavy boundary.

B1—12 to 18 inches; pale brown (10YR 6/3) loam; few fine faint light brownish gray mottles; weak fine subangular blocky structure; friable; common fine roots; many fine pores; strongly acid; clear wavy boundary.

B21t—18 to 24 inches; brown (10YR 5/3) clay loam; common medium distinct gray (10YR 6/1) and brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; common fine roots; many fine pores; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22tg—24 to 48 inches; gray (10YR 6/1) clay loam; common medium distinct yellowish brown (10YR 5/6) and few fine faint light gray mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; many fine pores; thin patchy clay films on faces of peds and in pores; very strongly acid; gradual wavy boundary.

B3g—48 to 72 inches; gray (10YR 6/1) clay loam; thin strata of loam; few medium distinct brownish yellow (10YR 6/8) and few fine faint light gray mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds and in pores; very strongly acid; gradual wavy boundary.

Cg—72 to 80 inches; light gray (10YR 7/1) stratified loam and loamy sand; few medium distinct brownish yellow (10YR 6/8) and white (10YR 8/1) mottles; massive; friable, slightly sticky, and slightly plastic; very strongly acid.

The Nahunta soils have a loamy A horizon and a fine-silty Bt horizon more than 60 inches thick over stratified sediment. Reaction is extremely acid to strongly acid, unless lime has been added.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 2 or 3.

The B1 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4, and it has few to common mottles in chroma of 2 or less. The upper part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. The lower part of the Bt horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2. The Bt horizon is loam or clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 0 to 2. It is stratified loam, loamy sand, or clay loam.

Norfolk series

The Norfolk series consists of well drained soils on uplands. The soils formed in moderately fine textured sediment. The slope ranges from 1 to 4 percent.

Typical pedon of Norfolk loamy sand, 1 to 4 percent slopes, 3.4 miles northeast of Williams, 0.9 mile

southwest of intersection of State Road 1305 and State Road 1303, 0.4 mile south of State Road 1305, and 25 feet east of farm path:

Ap—0 to 8 inches; brown (10YR 5/3) loamy sand; weak medium granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.
A2—8 to 14 inches; pale brown (10YR 6/3) loamy sand; weak medium granular structure; very friable; many fine roots; strongly acid; clear wavy boundary.
B1—14 to 16 inches; yellowish brown (10YR 5/6) sandy loam; weak fine subangular blocky structure; very friable; common fine roots; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B21t—16 to 40 inches; yellowish brown (10YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B22t—40 to 55 inches; brownish yellow (10YR 6/6) sandy clay loam; common medium distinct light gray (10YR 7/1) and common medium prominent red (2.5YR 4/8) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B3g—55 to 75 inches; mottled light gray (10YR 7/1), yellowish brown (10YR 5/6), and yellowish red (5YR 4/8) sandy clay loam with strata of sandy clay; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid.
Cg—75 to 85 inches; light gray (10YR 7/1) sandy clay loam with strata of sandy loam; common fine prominent yellowish red and few fine distinct yellowish mottles; massive; friable, slightly sticky, and slightly plastic; very strongly acid.

Norfolk soils have a sandy A horizon and a fine-loamy Bt horizon more than 60 inches thick over stratified sediment. The soil is very strongly acid or strongly acid throughout, unless lime has been added.

The Ap or A1 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 to 8. The B3 horizon, if present, is mottled in shades of gray, brown, yellow, or red. The B horizon is dominantly sandy clay loam but ranges to sandy loam or clay loam.

The C horizon is sandy clay loam, sandy loam, and loamy sand.

Onslow series

The Onslow series consists of moderately well drained soils on uplands. The soils formed in moderately fine textured sediment. The slope is 0 to 2 percent.

Typical pedon of Onslow fine sandy loam, 4.7 miles southwest of Pollocksville, 0.3 mile south of intersection of State Road 1114 and State Road 1115, and 25 feet west of State Road 1115:

Ap—0 to 9 inches; dark gray (10YR 4/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; medium acid; clear wavy boundary.
A2&Bh—9 to 15 inches; pale brown (10YR 6/3) loamy fine sand (A2); weak fine granular structure; very friable; about 20 percent is weakly cemented bodies of dark brown (7.5YR 3/2) loamy fine sand (Bh); medium acid; clear wavy boundary.
B21t—15 to 24 inches; light olive brown (2.5Y 5/4) sandy clay loam; few fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B22t—24 to 36 inches; pale brown (10YR 6/3) sandy clay loam with pockets of sandy loam; common coarse faint light brownish gray (10YR 6/2) and few medium distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.
B31g—36 to 52 inches; gray (10YR 6/1) sandy loam and pockets of sandy clay loam; few coarse distinct grayish brown (10YR 5/2) and common fine distinct brownish yellow mottles; weak fine subangular blocky structure; very friable; very strongly acid; clear wavy boundary.
B32g—52 to 76 inches; light brownish gray (10YR 6/2) sandy loam and thin lenses of loamy sand; few fine distinct gray and yellowish brown mottles; weak medium subangular blocky structure; very friable; common medium bodies of clean sand; very strongly acid; clear wavy boundary.
Cg—76 to 80 inches; light brownish gray (10YR 6/2) sandy clay loam; few medium distinct strong brown (7.5YR 5/8) mottles; massive; friable, slightly sticky, and plastic; very strongly acid.

Onslow soils have loamy horizons more than 60 inches thick over stratified sediments. These soils are very strongly acid or strongly acid, unless lime has been added.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The A2 horizon has hue of 2.5Y or 10YR, value of 6 or 7, and chroma of 3 or 4. It is 10 to 25 percent Bh horizon material that has hue of 5YR, value of 3 or 4, and chroma of 3 or 4.

The B2t horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 to 8. Gray mottles are within 20 to 30 inches of the surface. The B2t horizon is sandy clay loam or sandy loam. The B3 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2.

The C horizon is sandy clay loam or stratified sandy clay loam, sandy loam, loam, or loamy sand.

Pactolus series

The Pactolus series consists of moderately well drained and somewhat poorly drained soils on low ridges and in depressions on stream terraces. The soils formed in coarse textured sediment. The slope ranges from 0 to 2 percent.

Typical pedon of Pactolus loamy fine sand, 4.0 miles west of Trenton, 1 mile west of intersection of N.C. Highway 58 and N.C. Highway 41, 0.3 mile north of N.C. Highway 58, and 500 feet east of Trent River:

Ap—0 to 9 inches; brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.

C1—9 to 16 inches; light yellowish brown (10YR 6/4) loamy fine sand; single grained; loose; common fine roots; coated sand grains; strongly acid; gradual wavy boundary.

C2—16 to 35 inches; very pale brown (10YR 7/3) loamy fine sand; few coarse distinct yellowish brown (10YR 5/8) and light gray (10YR 7/2) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

C3g—35 to 50 inches; light gray (10YR 7/1) sand; few medium distinct yellowish brown (10YR 5/8) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

C4g—50 to 80 inches; light gray (10YR 7/1) sand; few fine distinct yellowish brown mottles in upper part; single grained; loose; very strongly acid.

Pactolus soils have sandy horizons more than 80 inches thick. These soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3.

The upper part of the C horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4. The lower part of the C horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 4. The C horizon ranges from sand to loamy sand.

Pantego series

The Pantego series consists of very poorly drained soils on broad, smooth flats on uplands. The soils formed in moderately fine textured sediment. The slope is less than 2 percent.

Typical pedon of Pantego loam, 5.9 miles north of Trenton, 1 mile west of the intersection of State Road 1001 and West Cox Road, 50 feet north of West Cox Road:

A11—0 to 8 inches; black (10YR 2/1) loam; weak medium granular structure; very friable; common fine roots; common fine pores; very strongly acid; clear wavy boundary.

A12—8 to 15 inches; very dark gray (10YR 3/1) loam; weak medium granular structure; very friable; common fine roots; strongly acid; gradual wavy boundary.

B1g—15 to 19 inches; grayish brown (10YR 5/2) sandy clay loam; common medium distinct very dark gray (10YR 3/1) mottles; weak fine subangular blocky structure; very friable; common fine roots; extremely acid; gradual wavy boundary.

B21tg—19 to 50 inches; grayish brown (10YR 5/2) sandy clay loam; common medium distinct dark gray (10YR 4/1) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; extremely acid; gradual wavy boundary.

B3g—50 to 68 inches; gray (10YR 5/1) sandy clay loam with pockets of sandy clay; distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; common fine pores; extremely acid; gradual wavy boundary.

Cg—68 to 80 inches; greenish gray (5GY 6/1) sandy clay loam with strata of sandy loam; massive; friable, slightly sticky, and slightly plastic; very strongly acid.

Pantego soils have loamy horizons more than 60 inches thick over stratified sediment. These soils are extremely acid to strongly acid, unless limed.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1.

The Bt horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is sandy clay loam or sandy loam.

The C horizon has hue of 10YR, 2.5Y, or 5GY, value of 5 to 7, and chroma of 1 or 2. It is sandy clay loam or stratified sandy loam, sandy clay loam, and sandy clay.

Rains series

The Rains series consists of poorly drained soils on broad smooth uplands and in depressions. The soils formed in moderately fine textured sediment. The slope is less than 1 percent.

Typical pedon of Rains fine sandy loam, 0.3 mile east of Phillips crossroads, 0.2 mile south of intersection of N.C. Highway 58 and State Road 1133, and 50 feet east of State Road 1133:

Ap—0 to 8 inches; dark gray (10YR 4/1) fine sandy loam; weak medium granular structure; very friable; few fine roots; medium acid; abrupt smooth boundary.

A2—8 to 12 inches; gray (10YR 6/1) fine sandy loam; weak medium granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

B1g—12 to 16 inches; gray (10YR 6/1) sandy loam; few medium light yellowish brown (10YR 6/4) mottles;

weak fine subangular blocky structure; very friable; few fine roots; few root channels filled with dark gray sandy loam; strongly acid; clear wavy boundary.

B21tg—16 to 40 inches; gray (10YR 6/1) sandy clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22tg—40 to 55 inches; gray (10YR 6/1) sandy clay loam; few medium distinct strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3g—55 to 72 inches; light gray (10YR 7/1) sandy clay loam with thin strata of sandy clay; few medium distinct yellowish brown (10YR 5/8) and few medium prominent red (2.5YR 4/6) mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; very strongly acid; gradual wavy boundary.

Cg—72 to 80 inches; light gray (10YR 7/1) sandy clay loam with thin clay loam strata; few medium distinct brownish yellow (10YR 6/8) and few medium prominent red (2.5YR 5/8) mottles; massive; firm, slightly sticky, and slightly plastic; very strongly acid.

The Rains soils have loamy horizons more than 60 inches thick over stratified sediment. The soils are very strongly acid or strongly acid, unless limed.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is dominantly sandy clay loam or clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1. It is stratified sandy loam, sandy clay loam, or sandy clay.

Stallings series

The Stallings series consists of somewhat poorly drained soils on uplands. The soils formed in moderately coarse textured sediment. The slope ranges from 0 to 2 percent.

Typical pedon of Stallings loamy fine sand, 3.1 miles north of Phillips crossroads, 0.5 mile northwest of intersection of State Road 1300 and State Road 1129, and 25 feet north of State Road 1300:

Ap—0 to 8 inches; dark gray (10YR 4/1) loamy fine sand; weak medium granular structure; very friable; few fine roots; medium acid; abrupt smooth boundary.

A2—8 to 13 inches; light brownish gray (10YR 6/2) loamy fine sand; weak fine subangular blocky structure; friable; few fine roots; strongly acid; clear wavy boundary.

B1—13 to 21 inches; pale brown (10YR 6/3) sandy loam; few medium distinct yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable; few fine roots; clay coats on grains and bridging of grains; very strongly acid; clear wavy boundary.

B2tg—21 to 44 inches; gray (10YR 6/1) sandy loam; few coarse distinct strong brown (7.5YR 5/8) and common medium distinct light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; friable; thin clay coats on grains and bridging of grains; very strongly acid; gradual wavy boundary.

B3g—44 to 80 inches; light brownish gray (10YR 6/2) loamy sand with pockets of sandy loam and sand; few fine distinct brownish yellow mottles; pockets of uncoated sand are light gray (10YR 7/1); weak fine subangular blocky structure; friable; very strongly acid.

Stallings soils have a sandy A horizon and a loamy Bt horizon more than 40 inches thick. The soils are extremely acid to strongly acid, unless limed.

The A1 or Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 to 7, and chroma of 2 or 3.

The upper part of the B horizon has hue of 10YR, value of 5 to 7, and chroma of 3 or 4, and it has few to common mottles in chroma of 2 or less. The lower part of the B horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. The B2 horizon is sandy loam or fine sandy loam. The B3g horizon is sandy loam or loamy sand.

Stockade series

The Stockade series consists of very poorly drained soils in slight depressions on uplands. The soils formed in moderately fine textured sediment mixed in soft marl. The slope is less than 1 percent.

Typical pedon of Stockade fine sandy loam, 4.9 miles north of Trenton, 0.9 mile north of intersection of State Road 1001 and State Road 1320, and 50 feet east of State Road 1001:

Ap—0 to 9 inches; black (10YR 2/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.

A12—9 to 18 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; medium acid; clear wavy boundary.

B1g—18 to 22 inches; dark gray (10YR 4/1) fine sandy loam; weak fine subangular blocky structure; very friable; common fine roots; slightly acid; gradual wavy boundary.

B21tg—22 to 34 inches; dark gray (10YR 4/1) sandy clay loam with thin lenses of sandy loam; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; neutral; gradual wavy boundary.
B22tg—34 to 42 inches; gray (10YR 5/1) sandy clay loam with thin lenses of sandy loam; few fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; thin patchy clay films on faces of peds; neutral; gradual wavy boundary.
B3g—42 to 52 inches; gray (N6/0) sandy clay loam with thin lenses of sandy loam; few fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable, slightly sticky, and slightly plastic; moderately alkaline; gradual wavy boundary.
IICg—52 to 80 inches; greenish gray (5G 6/1) soft marl that crushes to sandy clay loam, sandy loam, and sandy clay; many coarse faint greenish gray (5GY 6/1) mottles; massive; friable; moderately alkaline.

The Stockade soils have loamy horizons 40 to 60 inches thick. The soils are slightly acid or neutral in the B horizon and neutral to moderately alkaline in the C horizon.

The Ap or A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The B2tg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. It is sandy clay loam or sandy loam.

The IIC horizon is stratified sandy clay loam, sandy loam, loamy sand, and sandy clay. The lower part of the B horizon and the C horizon may have fragments of friable to hard marl and iron and manganese concretions.

These soils are taxadjuncts to the Stockade series because they are siliceous. Their use, management, and behavior, however, are not affected.

Torhunta series

The Torhunta series consists of very poorly drained soils on broad, smooth uplands and in depressions. The soils formed in moderately coarse textured sediment. The slope is less than 1 percent.

Typical pedon of Torhunta fine sandy loam, 0.8 mile southwest of Hargetts Crossroads, 0.2 mile south of the intersection of N.C. Highway 41 and Forest Road, and 50 feet east of Forest Road:

A11—0 to 6 inches; black (10YR 2/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.
A12—6 to 15 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; very strongly acid; gradual wavy boundary.
B1g—15 to 22 inches; dark gray (10YR 4/1) fine sandy loam; few fine faint very dark gray mottles; weak medium subangular blocky structure; very friable; few fine roots; very strongly acid; gradual wavy boundary.
B2g—22 to 47 inches; grayish brown (10YR 5/2) sandy loam; few fine distinct yellowish brown mottles; weak fine subangular blocky structure; very friable; very strongly acid; gradual wavy boundary.
Cg—47 to 72 inches; light brownish gray (10YR 6/2) stratified sandy loam, loamy sand, and sand; massive; very friable; strongly acid.

Torhunta soils have loamy horizons 20 to 50 inches thick. They are extremely acid or very strongly acid, unless limed.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The B horizon has hue of 10YR, value of 4 through 6, and chroma of 1 or 2. It is sandy loam or fine sandy loam.

The C horizon is stratified loamy sand, sand, or sandy loam.

Woodington series

The Woodington series consists of poorly drained soils on broad smooth uplands and in depressions. The soils formed in moderately coarse textured sediment. The slope is less than 1 percent.

Typical pedon of Woodington fine sandy loam, 0.9 mile south of Hargetts Crossroads, 0.1 mile east of intersection of U.S. Highway 258 and field road, and 10 feet south of field road:

Ap—0 to 6 inches; very dark gray (10YR 3/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; very strongly acid; abrupt smooth boundary.
A2—6 to 14 inches; gray (10YR 5/1) fine sandy loam; weak medium granular structure; very friable; common fine roots; few root channels filled with dark gray fine sandy loam; very strongly acid; clear wavy boundary.
B1g—14 to 19 inches; gray (10YR 5/1) fine sandy loam; few medium distinct light yellowish brown (10YR 6/4) mottles; weak medium granular structure; very friable; few fine roots; few root channels filled with dark gray fine sandy loam; strongly acid; clear wavy boundary.
B21tg—19 to 36 inches; gray (10YR 6/1) fine sandy loam; few medium distinct light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; very friable and slightly sticky; sand coated and bridged with clay; very strongly acid; gradual wavy boundary.
B22tg—36 to 48 inches; gray (10YR 6/1) fine sandy loam; few fine prominent strong brown and common

medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable and slightly sticky; sand coated and bridged with clay; common medium pockets of clean sand; very strongly acid; gradual wavy boundary.

B3g—48 to 74 inches; gray (10YR 6/1) fine sandy loam; few medium distinct strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable and slightly sticky; common medium pockets of clean sand; very strongly acid; gradual wavy boundary.

Cg—74 to 85 inches; light gray (5Y 7/1) stratified sandy clay loam, sandy loam, and clay loam; few medium distinct strong brown (7.5YR 5/8) mottles; massive; friable, slightly sticky and slightly plastic; slightly acid.

The Woodington soils have loamy horizons 60 to 80 inches thick. The soils are extremely acid through strongly acid in the A and B horizons, unless lime has been added. The C horizon is extremely acid to slightly acid.

The Ap or A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2.

The Bt horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It is sandy loam or fine sandy loam.

The C horizon is stratified sandy loam, loamy sand, sandy clay loam, or clay loam.

formation of the soils

This section discusses the factors of soil formation and relates them to the soils in the survey area.

factors of soil formation

Soil is the product of the combined effects of plants and animals, climate, parent material, relief, and time. These five factors determine the characteristics of the soil in any of the natural soil bodies. The processes of soil formation include: (1) additions of organic and mineral material to the soil as solids, liquids, and gases; (2) losses of this material from the soil; (3) translocation of material from one part of the soil to another; and (4) transformation of mineral and organic substances within the soil (*4*).

parent material

Parent material has been an important factor in the formation of the soils of Jones County. It has caused differences in such characteristics as thickness and texture of horizons, mineral make up, amount and thickness of organic matter, and the chemistry of the soil.

The soils in Jones County formed in (1) surficial sediment of the Wicomico and Talbot marine terraces; (2) alluvium recently deposited in drainageways; (3) accumulation of organic material on the broad undissected interstream divides; and (4) partly surficial sediment and partly the underlying formation, which is very irregular near the ground surface and contains marl and many sinks filled in part with sand or clayey material.

The kinds of parent material, although related, differ in mineral and chemical composition. Many differences in the soils of Jones County are attributed to the parent material in which the soils formed. The soils in Jones County are grouped as follows, according to the parent material in which they formed.

1. Bayboro, Craven, Leaf, and Lenoir soils formed in sediment having a high percentage of clay and silt. These soils are clayey and have a very low content of sand.
2. Exum, Grantham, and Nahunta soils formed in sediment consisting of approximately equal percentages of very fine sand, silt, and clay.
3. Goldsboro, Grifton, Johns, Kalmia, Lynchburg, Marvyn, Norfolk, Onslow, Pantego, Rains, and Stockade soils formed in sediment having a relatively low percentage of silt and very fine sand and 18 to 35 percent clay.
4. Alpin, Leon, Murville, and Pactolus soils formed in sediment consisting almost entirely of sand. These soils have a low percentage of clay and silt. Leon and Murville soils have a spodic horizon.
5. Autryville, Kenansville, Muckalee, Stallings, Torhunta, and Woodington soils formed in sediment having a relatively high percentage of sand and 10 to 18 percent clay.
6. Grifton, Meggett, Muckalee, and Stockade soils formed in sediment containing marl. The marl has a high content of calcium carbonate, and these soils have a high base saturation.
7. Croatan and Hobonny soils formed in an accumulation of organic matter.

climate

Climate is a major determinant of the kinds of plants and animals living in and on the soil. The climate of Jones County is warm and humid. Summers are long and hot, and winters are short and mild. Mild temperatures and abundant rainfall promote rapid decomposition of organic matter, hasten chemical reactions, speed leaching of soluble bases, and increase translocation of the less soluble fine particles in the soil profile (*5*). Consequently the soils, except for those that formed in marl, are acid, strongly leached, and low in natural fertility. The soils have a higher content of clay in the B horizon than in the A or C horizon, except for the soils that formed in sand and recent alluvium.

plant and animal life

Plants and animals determine the kind of organic matter and the way it is incorporated into the soil. Pine forests cover most of the dissected uplands in Jones County. Pond pine and shrubs cover the undissected interstream divides. Cypress, sweetgum, and other hardwoods predominate on the flood plain above an elevation of 5 feet, and marsh grasses and a few cypresses cover the flood plain in lower lying areas.

Roots take up nutrients from the lower horizons, and animals transfer soil particles from one horizon to another. Plants and animals add organic matter, and plant roots increase soil structure and porosity. The organic matter is thought to be the energy source for the biological activity in which micro-organisms consume

oxygen in a saturated A horizon. The micro-organisms can reduce the oxygen level of the ground water, and the resultant anaerobic conditions can exist for several days or even weeks. Saturation and anaerobic conditions are thought to be responsible for the gray subsoil in the poorly drained soils.

time

The horizons in a soil profile take a long time to develop. Relief changes with time. Some of the differences in the soils in Jones County reflect a difference in age and changes in relief because of natural or geologic erosion. The older soils, for example, Norfolk, Goldsboro, and Rains soils on the more stable, nearly level upland divides, have well developed horizons and a thick profile. By contrast, the younger soils, for example, Muckalee soils, have almost no horizon development, and Johns, Kalmia, and Marvyn soils have well developed horizons but only a thin profile.

relief

The relief in Jones County is largely the result of the dissection of about two-thirds of the original nearly level plains by the Trent and White Oak Rivers and their tributaries. The degree of dissection of the landscape affects the formation of the soils by influencing the depth of the water table and the geologic removal of soil material by slope retreat.

Near the short, sharply rounded side slopes, the soils have a deep water table, a light colored A1 or Ap horizon, a thick A2 horizon, and a brightly colored B2 horizon. The soils in these areas are the Autryville, Goldsboro, Kalmia, Kenansville, Marvyn, Norfolk, and Onslow soils.

The soils in the smooth, broad, nearly level interstream areas have a shallow water table, a dark colored A1 or Ap horizon, a thin A2 horizon, a gray B2 horizon, and a low content of clay. The soils in these areas are Bayboro, Croatan, Grantham, Grifton, Leaf, Lenoir, Lynchburg, Meggett, Murville, Nahunta, Pantego, Rains, Stallings, Stockade, Torhunta, and Woodington soils.

The large interstream areas have an accumulation of organic matter in the most undissected part. The rainfall exceeds both evapotranspiration and the slow overland flow of water to the shallow streams nearby. The major soil in these areas is Croatan muck.

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glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	More than 12

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep

that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Irrigation. Application of water to soils to assist in production of crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the

surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Wetness. General terms used in reference to soils that have a seasonal high water table.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-77 at Kinston, N.C.]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	53.2	30.9	42.0	78	11	55	3.94	2.48	5.24	8	1.2
February	56.0	32.6	44.3	79	13	44	3.79	2.12	5.14	7	.7
March	63.4	39.9	51.7	86	24	152	3.83	2.43	5.09	7	.2
April	73.8	48.1	61.0	91	32	330	3.22	1.84	4.33	6	.0
May	80.7	56.4	68.6	96	38	577	4.29	2.22	5.97	7	.0
June	86.5	63.9	75.2	99	48	756	5.54	2.74	7.82	7	.0
July	89.6	68.0	78.8	99	56	893	6.28	3.24	8.76	9	.0
August	88.8	67.3	78.1	98	55	871	5.98	3.39	8.09	8	.0
September	83.9	61.5	72.8	95	44	684	5.20	2.39	7.48	6	.0
October	74.4	49.7	62.1	90	27	381	3.10	.97	4.81	5	.0
November	65.2	39.4	52.3	84	20	117	2.86	1.34	4.09	4	.0
December	55.8	32.3	44.0	78	12	54	3.45	1.90	4.71	6	.6
Yearly:											
Average	72.6	49.2	60.9	---	---	---	---	---	---	---	---
Extreme	---	---	---	100	9	---	---	---	---	---	---
Total	---	---	---	---	---	4,914	51.48	44.50	58.59	80	2.7

[1]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-77 at Kinston, N.C.]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 22	April 5	April 16
2 years in 10 later than--	March 13	March 29	April 10
5 years in 10 later than--	February 24	March 15	March 29
First freezing temperature in fall:			
1 year in 10 earlier than--	November 7	October 23	October 12
2 years in 10 earlier than--	November 12	October 30	October 18
5 years in 10 earlier than--	November 23	November 11	October 30

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-77 at Kinston, N.C.]

Probability	Length of growing season if daily minimum temperature is--		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	239	210	185
8 years in 10	250	221	195
5 years in 10	272	241	214
2 years in 10	293	260	232
1 year in 10	304	271	242

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AnB	Alpin fine sand, 0 to 6 percent slopes	4,443	1.5
AuB	Autryville loamy fine sand, 0 to 4 percent slopes	9,315	3.1
Ba	Bayboro loam	4,782	1.6
CrB	Craven very fine sandy loam, 1 to 4 percent slopes	6,356	2.1
CrC	Craven very fine sandy loam, 4 to 8 percent slopes	1,431	0.5
Ct	Croatan muck	50,810	17.0
ExA	Exum very fine sandy loam, 0 to 2 percent slopes	837	0.3
GoA	Goldsboro loamy sand, 0 to 2 percent slopes	12,403	4.1
Gr	Grantham loam	837	0.3
Gt	Grifton fine sandy loam	5,679	1.9
Ho	Hobonny muck	1,345	0.5
Jo	Johns fine sandy loam	1,196	0.4
KaA	Kalmia loamy sand, 0 to 3 percent slopes	956	0.3
KeA	Kenansville loamy fine sand, 0 to 3 percent slopes	4,364	1.5
La	Leaf silt loam	13,211	4.4
Le	Lenoir loam	8,369	2.8
Ln	Leon sand	5,679	1.9
Ly	Lynchburg fine sandy loam	9,863	3.3
MaC	Marvyn loamy sand, 6 to 15 percent slopes	3,587	1.2
Me	Meggett loam	1,405	0.5
Mk	Muckalee loam	17,933	6.0
Mu	Murville fine sand	3,587	1.2
Na	Nahunta loam	747	0.2
NoB	Norfolk loamy sand, 1 to 4 percent slopes	6,964	2.3
On	Onslow fine sandy loam	6,874	2.3
Pa	Pactolus loamy fine sand	1,554	0.5
Pn	Pantego loam	27,796	9.3
Ra	Rains fine sandy loam	23,014	7.7
St	Stallings loamy fine sand	13,031	4.4
Sx	Stockade fine sandy loam	1,495	0.5
To	Torhunta fine sandy loam	20,623	6.9
Wo	Woodington fine sandy loam	21,221	7.1
	Water areas less than 40 acres	7,173	2.4
	Total	298,880	100.0

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management that includes artificial drainage. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Corn	Soybeans	Tobacco	Wheat	Oats	Improved bermudagrass	Grass-clover
	Bu	Bu	Lb	Bu	Bu	AUM*	AUM*
AnB---- Alpin	---	17	1,650	---	---	8.0	---
AuB---- Autryville	77	30	2,200	40	70	9.0	---
Ba---- Bayboro	120	45	---	50	75	---	10.0
CrB---- Craven	115	40	2,300	45	65	---	10.0
CrC---- Craven	---	---	---	40	55	---	9.0
Ct---- Croatan	125	40	---	50	---	---	6.0
ExA---- Exum	122	46	2,900	50	65	---	12.0
GoA---- Goldsboro	122	40	2,800	50	75	---	12.0
Gr---- Grantham	115	40	---	45	70	---	10.0
Gt---- Grifton	110	40	---	45	70	---	11.0
Ho---- Hobonny	---	---	---	---	---	---	---
Jo---- Johns	120	48	2,600	48	75	---	10.0
KaA---- Kalmia	110	40	2,800	50	90	---	10.0
KeA---- Kenansville	77	30	2,200	40	70	5.0	8.0
La---- Leaf	100	35	---	---	---	---	9.0
Le---- Lenoir	100	40	2,250	40	75	---	10.0
Ln---- Leon	---	---	---	---	---	---	---
Ly---- Lynchburg	117	40	2,600	45	75	---	11.0
MaC---- Marvyn	70	28	---	40	55	8.0	10.0
Me---- Meggett	92	45	---	45	70	---	9.0
Mk---- Muckalee	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Soybeans	Tobacco	Wheat	Oats	Improved bermuda-grass	Grass-clover
	Bu	Bu	Lb	Bu	Bu	AUM*	AUM*
Mu--- Murville	---	---	---	---	---	---	---
Na--- Nahunta	120	43	2,500	55	75	---	11.0
NoB--- Norfolk	100	38	2,850	52	90	---	10.5
On--- Onslow	117	37	2,450	42	75	---	10.0
Pa--- Pactolus	65	25	2,000	---	---	---	6.0
Pn--- Pantego	130	45	---	50	70	---	10.0
Ra--- Rains	113	40	2,300	50	70	---	10.0
St--- Stallings	105	35	2,200	55	75	---	8.0
Sx--- Stockade	126	35	---	45	70	12.0	12.0
To--- Torhunta	100	35	---	45	70	---	10.0
Wo--- Woodington	105	37	---	50	70	---	10.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	956	---	---	---
II	65,594	6,964	44,951	13,679
III	123,131	6,356	115,221	1,554
IV	28,351	5,018	18,890	4,443
V	21,520	---	21,520	---
VI	---	---	---	---
VII	52,155	---	52,155	---
VIII	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
AnB Alpin	3s	Slight	Moderate	Moderate	Loblolly pine Longleaf pine	85 70	Loblolly pine.
AuB Autryville	3s	Slight	Moderate	Moderate	Loblolly pine Longleaf pine	77 ---	Loblolly pine, longleaf pine.
Ba Bayboro	2w	Slight	Severe*	Severe*	Loblolly pine** Sweetgum** Southern red oak White oak	95 94 --- ---	Loblolly pine, sweetgum,*** water tupelo.
CrB, CrC Craven	3w	Slight	Moderate	Slight	Loblolly pine Longleaf pine Water oak Sweetgum White oak Southern red oak Red maple	81 67 --- --- --- --- ---	Loblolly pine.
Ct Croatan	4w	Slight	Severe*	Severe*	Pond pine Water tupelo Baldcypress Loblolly pine** Sweetgum Swamp tupelo Atlantic white-cedar	55 60 --- 70 --- --- ---	Loblolly pine.***
ExA Exum	2w	Slight	Moderate	Slight	Loblolly pine Longleaf pine Sweetgum Yellow-poplar Southern red oak White oak	90 77 90 100 --- ---	Loblolly pine, sweetgum, American sycamore.
GoA Goldsboro	2w	Slight	Moderate	Slight	Loblolly pine Longleaf pine Sweetgum Southern red oak White oak	90 77 90 --- ---	Loblolly pine, yellow-poplar, American sycamore, sweetgum.
Gr Grantham	2w	Slight	Severe*	Severe*	Loblolly pine**	90	Loblolly pine, sweetgum, American sycamore.***
Gt Grifton	2w	Slight	Severe*	Severe*	Loblolly pine**	90	Loblolly pine, sweetgum, American sycamore,*** water tupelo, water oak.
Jo Johns	2w	Slight	Moderate	Slight	Loblolly pine Sweetgum	86 90	Loblolly pine.
KaA Kalmia	2o	Slight	Slight	Slight	Loblolly pine Sweetgum Yellow-poplar Southern red oak White oak	88 85 96 --- ---	Loblolly pine, yellow-poplar, cherrybark oak.
KeA Kenansville	3s	Slight	Moderate	Moderate	Loblolly pine Longleaf pine	80 65	Loblolly pine.
La Leaf	2w	Slight	Severe*	Severe*	Loblolly pine** Sweetgum**	90 90	Loblolly pine, sweetgum.***

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
Le---------- Lenoir	2w	Slight	Moderate	Moderate	Loblolly pine----------	90	Loblolly pine, longleaf pine, sweetgum, American sycamore.
Ln---------- Leon	4w	Slight	Moderate	Moderate	Longleaf pine----------	65	
Ly---------- Lynchburg	2w	Slight	Moderate	Slight	Loblolly pine----------	86	Loblolly pine, American sycamore, sweetgum.
					Longleaf pine----------	74	
					Yellow-poplar----------	92	
					Sweetgum----------	90	
					Southern red oak-------	---	
					White oak----------	---	
					Blackgum----------	---	
MaC---------- Marvyn	2o	Slight	Slight	Slight	Loblolly pine----------	90	Loblolly pine.
					Shortleaf pine----------	80	
					Longleaf pine----------	80	
Me---------- Meggett	1w	Slight	Severe*	Severe*	Loblolly pine**--------	100	Loblolly pine, sweetgum, American sycamore.***
					Pond pine----------	75	
Mk---------- Muckalee	2w	Slight	Severe*	Severe*	Sweetgum**----------	90	Sweetgum, loblolly pine, American sycamore, eastern cottonwood, Nuttall oak.***
					Loblolly pine**--------	90	
					Water oak----------	90	
					Green ash**----------	85	
					Eastern cottonwood**---	100	
Mu---------- Murville	2w	Slight	Severe*	Severe*	Loblolly pine**--------	90	Loblolly pine.***
Na---------- Nahunta	2w	Slight	Moderate	Moderate	Loblolly pine----------	87	Loblolly pine, yellow-poplar, American sycamore, cherrybark oak.
					Sweetgum----------	90	
					Yellow-poplar----------	100	
					Southern red oak-------	---	
					White oak----------	---	
NoB---------- Norfolk	2o	Slight	Slight	Slight	Loblolly pine----------	86	Loblolly pine.
					Longleaf pine----------	68	
On---------- Onslow	2w	Slight	Moderate	Slight	Loblolly pine----------	76	Loblolly pine.
					Longleaf pine----------	67	
Pa---------- Pactolus	3w	Slight	Moderate	Moderate	Loblolly pine----------	84	Loblolly pine.
					Longleaf pine----------	70	
Pn---------- Pantego	1w	Slight	Severe*	Severe*	Loblolly pine**--------	98	Loblolly pine, sweetgum, American sycamore,*** and water tupelo.
					Pond pine----------	73	
					Baldcypress----------	---	
					Water tupelo----------	---	
					Water oak----------	---	
Ra---------- Rains	2w	Slight	Severe*	Severe*	Loblolly pine**--------	94	Loblolly pine, sweetgum, American sycamore.***
					Sweetgum**----------	90	
St---------- Stallings	3w	Slight	Moderate	Slight	Loblolly pine----------	79	Loblolly pine, yellow-poplar, American sycamore, sweetgum.
					Longleaf pine----------	---	
					Sweetgum----------	---	
					Yellow-poplar----------	---	
					Water oak----------	---	
Sx---------- Stockade	1w	Slight	Severe	Severe	Sweetgum----------	100	
					Water oak----------	100	
					Blackgum----------	100	
					Swamp chestnut oak-----	100	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
To---------- Torhunta	2w	Slight	Severe	Severe	Loblolly pine---------- Sweetgum---------- Water tupelo----------	90 90 ---	Loblolly pine, sweetgum, American sycamore, Shumard oak.
Wo---------- Woodington	3w	Slight	Severe	Severe	Loblolly pine---------- Sweetgum---------- White oak---------- Southern red oak------- Water tupelo----------	83 --- --- --- ---	Loblolly pine, American sycamore, water tupelo, water oak, sweetgum.

* Equipment use is restricted and seedling mortality is moderate in areas with adequate surface drainage.
** The potential productivity is attainable only in areas with adequate surface drainage.
*** Trees named are suitable for planting only in areas with adequate surface drainage.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
AnB Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
AuB Autryville	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
Ba Bayboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
CrB Craven	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight.
CrC Craven	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight.
Ct Croatan	Severe: floods, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness.	Severe: wetness, excess humus.
ExA Exum	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight.
GoA Goldsboro	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
Gr Grantham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Gt Grifton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ho Hobonny	Severe: floods, ponding, excess humus.	Severe: wetness, excess humus.	Severe wetness, floods, excess humus.	Severe: wetness, excess humus.
Jo Johns	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
KaA Kalmia	Slight	Slight	Slight	Slight.
KeA Kenansville	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
La Leaf	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.
Le Lenoir	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.
Ln Leon	Severe: wetness, too sandy.	Severe: wetness, too sandy.	Severe: too sandy, wetness.	Severe: wetness, too sandy.
Ly Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MaC Marvyn	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Me---------- Meggett	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Mk---------- Muckalee	Severe: floods, wetness.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
Mu---------- Murville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Na---------- Nahunta	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
NoB---------- Norfolk	Slight----------	Slight----------	Moderate: slope.	Slight.
On---------- Onslow	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Pa---------- Pactolus	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Pn---------- Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ra---------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
St---------- Stallings	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Sx---------- Stockade	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
To---------- Torhunta	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wo---------- Woodington	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AnB---- Alpin	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
AuB---- Autryville	Poor	Fair	Good	Good	Good	Fair	Very poor.	Fair	Good	Poor.
Ba---- Bayboro	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CrB---- Craven	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CrC---- Craven	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ct---- Croatan	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
ExA---- Exum	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
GoA---- Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Gr---- Grantham	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Gt---- Grifton	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair.
Ho---- Hobonny	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Jo---- Johns	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KaA---- Kalmia	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KeA---- Kenansville	Poor	Fair	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
La---- Leaf	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Le---- Lenoir	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ln---- Leon	Poor	Poor	Fair	Poor	Poor	Poor	Very poor.	Poor	Poor	Very poor.
Ly---- Lynchburg	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
MaC---- Marvyn	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Me---- Meggett	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Mk---- Muckalee	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Mu---------- Murville	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Na---------- Nahunta	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
NoB---------- Norfolk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
On---------- Onslow	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Pa---------- Pactolus	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Pn---------- Pantego	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
Ra---------- Rains	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
St---------- Stallings	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
Sx---------- Stockade	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
To---------- Torhunta	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Wo---------- Woodington	Poor	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair	Poor.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AnB--- Alpin	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Severe: droughty.
AuB--- Autryville	Moderate: cutbanks cave.	Slight---	Moderate: wetness.	Slight---	Slight---	Moderate: droughty.
Ba--- Bayboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
CrB--- Craven	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.	Slight.
CrC--- Craven	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Slight.
Ct--- Croatan	Severe: excess humus, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.	Severe: low strength, wetness.	Severe: wetness, low strength.	Severe: wetness, excess humus.
ExA--- Exum	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Slight.
GoA--- Goldsboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
Gr--- Grantham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Gt--- Grifton	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ho--- Hobonny	Severe: excess humus, ponding.	Severe: floods, low strength, ponding.	Severe: floods, low strength, ponding.	Severe: floods, low strength, ponding.	Severe: ponding, floods.	Severe: ponding, floods.
Jo--- Johns	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
KaA--- Kalmia	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
KeA--- Kenansville	Severe: cutbanks cave.	Slight---	Slight---	Slight---	Slight---	Moderate: droughty.
La--- Leaf	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness.
Le--- Lenoir	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Ln--- Leon	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
Ly--- Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MaC--- Marvyn	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength.	Moderate: slope.
Me--- Meggett	Severe: wetness, too clayey.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, wetness.	Severe: wetness.
Mk--- Muckalee	Severe: cutbanks cave, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.	Severe: wetness, floods.
Mu--- Murville	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Na--- Nahunta	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
NoB--- Norfolk	Moderate: wetness.	Slight---	Moderate: wetness.	Slight---	Slight---	Slight.
On--- Onslow	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Pa--- Pactolus	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
Pn--- Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ra--- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
St--- Stallings	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Sx--- Stockade	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
To--- Torhunta	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wo--- Woodington	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AnB---- Alpin	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
AuB---- Autryville	Moderate: wetness.	Severe: seepage.	Slight	Severe: seepage.	Fair: too sandy.
Ba---- Bayboro	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
CrB, CrC---- Craven	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
Ct---- Croatan	Severe: wetness, percs slowly.	Severe: excess humus, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
ExA---- Exum	Severe: wetness.	Slight	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
GoA---- Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Gr---- Grantham	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
Gt---- Grifton	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Poor: wetness.
Ho---- Hobonny	Severe: floods, ponding.	Severe: floods, excess humus, ponding.	Severe: floods, excess humus, ponding.	Severe: floods, ponding.	Poor: ponding, excess humus.
Jo---- Johns	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage.
KaA---- Kalmia	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
KeA---- Kenansville	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
La---- Leaf	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Le---- Lenoir	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ln--- Leon	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Ly--- Lynchburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
MaC--- Marvyn	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Me--- Meggett	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Mk--- Muckalee	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Mu--- Murville	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
Na--- Nahunta	Severe: wetness.	Slight---	Severe: wetness.	Severe: wetness.	Poor: wetness.
NoB--- Norfolk	Moderate: wetness.	Moderate: seepage.	Slight---	Slight---	Slight.
On--- Onslow	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Pa--- Pactolus	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Fair: too sandy, wetness.
Pn--- Pantego	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ra--- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
St--- Stallings	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: thin layer.
Sx--- Stockade	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness, thin layer.
To--- Torhunta	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.
Wo--- Woodington	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: wetness.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Topsoil
AnB--- Alpin	Good	Probable	Poor: too sandy.
AuB--- Autryville	Good	Improbable: thin layer.	Fair: too sandy.
Ba--- Bayboro	Poor: low strength, wetness.	Improbable: excess fines.	Poor: thin layer, wetness.
CrB, CrC--- Craven	Poor: low strength.	Improbable: excess fines.	Poor: thin layer.
Ct--- Croatan	Poor: wetness, low strength.	Improbable: excess fines.	Poor: excess humus, wetness.
ExA--- Exum	Fair: wetness.	Improbable: excess fines.	Good.
GoA--- Goldsboro	Fair: wetness.	Improbable: excess fines.	Fair: too sandy.
Gr--- Grantham	Poor: low strength, wetness.	Improbable: excess fines.	Poor: wetness.
Gt--- Grifton	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
Ho--- Hobonny	Poor: wetness.	Improbable: excess fines.	Poor: wetness, excess humus.
Jo--- Johns	Fair: wetness.	Probable	Fair: thin layer.
KaA--- Kalmia	Good	Probable	Fair: too sandy, thin layer.
KeA--- Kenansville	Good	Probable	Fair: too sandy.
La--- Leaf	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Poor: thin layer, wetness, too clayey.
Le--- Lenoir	Poor: low strength.	Improbable: excess fines.	Poor: thin layer.
Ln--- Leon	Poor: wetness.	Probable	Poor: too sandy, wetness.
Ly--- Lynchburg	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
MaC--- Marvyn	Fair: low strength.	Improbable: excess fines.	Fair: thin layer, slope.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Topsoil
Me---------- Meggett	Poor: wetness, shrink-swell.	Improbable: excess fines.	Poor: thin layer, wetness.
Mk---------- Muckalee	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
Mu---------- Murville	Poor: wetness.	Probable----------	Poor: too sandy, wetness.
Na---------- Nahunta	Poor: low strength.	Improbable: excess fines.	Good.
NoB---------- Norfolk	Good----------	Improbable: excess fines.	Fair: too sandy.
On---------- Onslow	Fair: wetness.	Improbable: excess fines.	Good.
Pa---------- Pactolus	Fair: wetness.	Probable----------	Fair: too sandy.
Pn---------- Pantego	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
Ra---------- Rains	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
St---------- Stallings	Fair: wetness.	Probable----------	Fair: too sandy.
Sx---------- Stockade	Poor: wetness.	Improbable: excess fines.	Poor: wetness.
To---------- Torhunta	Poor: wetness.	Probable----------	Poor: wetness.
Wo---------- Woodington	Poor: wetness.	Probable----------	Poor: wetness.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
AnB---- Alpin	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, soil blowing.	Droughty.
AuB---- Autryville	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy------	Droughty.
Ba---- Bayboro	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly---	Wetness, percs slowly.	Wetness, percs slowly.
CrB---- Craven	Slight---------	Moderate: hard to pack, wetness.	Severe: slow refill.	Percs slowly---	Erodes easily, wetness.	Erodes easily, percs slowly.
CrC---- Craven	Slight---------	Moderate: hard to pack, wetness.	Severe: slow refill.	Percs slowly, slope.	Erodes easily, wetness.	Erodes easily, percs slowly.
Ct---- Croatan	Slight---------	Severe: wetness.	Slight---------	Percs slowly, subsides.	Wetness, percs slowly.	Wetness, percs slowly.
ExA---- Exum	Slight---------	Moderate: piping, wetness.	Moderate: deep to water.	Favorable------	Erodes easily, wetness.	Erodes easily.
GoA---- Goldsboro	Moderate: seepage.	Moderate: wetness.	Moderate: deep to water.	Favorable------	Wetness--------	Favorable.
Gr---- Grantham	Slight---------	Severe: wetness.	Moderate: slow refill.	Favorable------	Erodes easily, wetness.	Wetness, erodes easily.
Gt---- Grifton	Moderate: seepage.	Severe: wetness.	Slight---------	Favorable------	Wetness--------	Wetness.
Ho---- Hobonny	Moderate: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Floods, ponding, subsides.	Ponding, soil blowing.	Wetness.
Jo---- Johns	Severe: seepage.	Moderate: wetness.	Slight---------	Favorable------	Wetness--------	Favorable.
KaA---- Kalmia	Severe: seepage.	Slight---------	Severe: no water.	Deep to water	Too sandy------	Droughty.
KeA---- Kenansville	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy------	Droughty.
La---- Leaf	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly---	Wetness, percs slowly.	Wetness, percs slowly.
Le---- Lenoir	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly---	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ln---- Leon	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy, soil blowing.	Wetness, droughty.
Ly---- Lynchburg	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Favorable------	Wetness--------	Wetness.
MaC---- Marvyn	Severe: slope.	Moderate: piping, hard to pack.	Severe: no water.	Deep to water	Slope----------	Slope.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
Me---------- Meggett	Moderate: seepage.	Severe: hard to pack, wetness.	Severe: slow refill.	Percs slowly---	Wetness, percs slowly.	Wetness, percs slowly.
Mk---------- Muckalee	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Floods, cutbanks cave.	Wetness, too sandy.	Wetness, droughty.
Mu---------- Murville	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Floods, cutbanks cave.	Wetness, too sandy.	Wetness.
Na---------- Nahunta	Slight---------	Severe: wetness.	Moderate: slow refill.	Favorable------	Erodes easily, wetness.	Wetness, erodes easily.
NoB---------- Norfolk	Moderate: seepage.	Slight---------	Severe: deep to water.	Deep to water	Favorable------	Favorable.
On---------- Onslow	Moderate: seepage.	Severe: wetness.	Moderate: deep to water.	Favorable------	Wetness--------	Favorable.
Pa---------- Pactolus	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Cutbanks cave	Wetness--------	Droughty.
Pn---------- Pantego	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Favorable------	Wetness--------	Wetness.
Ra---------- Rains	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Favorable------	Wetness, soil blowing.	Wetness.
St---------- Stallings	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness--------	Wetness.
Sx---------- Stockade	Severe: seepage.	Severe: wetness.	Slight---------	Favorable------	Wetness--------	Wetness.
To---------- Torhunta	Severe: seepage.	Severe: piping, wetness.	Slight---------	Cutbanks cave	Wetness--------	Wetness.
Wo---------- Woodington	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness--------	Wetness.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AnB---------- Alpin	0-8	Fine sand--------	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	8-42	Fine sand, sand	SP-SM	A-3, A-2-4	0	95-100	90-100	60-100	5-12	---	NP
	42-55	Fine sand, sand	SP-SM, SM	A-2-4	0	95-100	90-100	60-100	11-20	---	NP
	55-80	Fine sand, sand	SP-SM	A-3, A-2-4	0	95-100	90-100	60-100	5-12	---	NP
AuB---------- Autryville	0-27	Loamy fine sand	SP-SM, SM	A-2, A-3	0	100	100	50-100	5-20	---	NP
	27-42	Sandy loam, sandy clay loam, fine sandy loam.	SM	A-2	0	100	100	50-100	15-30	<25	NP-3
	42-51	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	100	50-100	5-20	---	NP
	51-90	Sandy loam, sandy clay loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4	0	100	100	60-100	20-49	<30	NP-10
Ba---------- Bayboro	0-14	Loam----------	CL, ML, CL-ML	A-6, A-7	0	100	100	85-100	60-80	25-42	4-20
	14-80	Sandy clay, clay, sandy clay loam.	CL, CH	A-7	0	100	100	85-100	55-95	40-70	20-40
CrB, CrC---------- Craven	0-10	Very fine sandy loam.	ML, CL-ML, SM, SM-SC	A-4	0	100	100	75-100	45-90	<35	NP-7
	10-58	Clay, clay loam, silty clay.	CH	A-7	0	100	100	90-100	65-98	51-70	24-43
	58-80	Sandy clay loam, sandy loam, loamy sand.	SM, SM-SC, SC	A-2, A-4, A-6	0	100	95-100	50-100	15-49	<35	NP-15
Ct---------- Croatan	0-28	Sapric material	Pt	---	---	---	---	---	---	---	---
	28-38	Sandy loam, fine sandy loam, mucky sandy loam.	SM, SC, SM-SC	A-2, A-4	0	100	100	60-85	30-49	<30	NP-10
	38-60	Loam, clay loam, sandy clay loam.	CL, CL-ML, SC, SM-SC	A-4, A-6	0	100	100	75-100	36-95	18-36	4-15
	60-80	Variable---------	---	---	---	---	---	---	---	---	---
ExA---------- Exum	0-11	Very fine sandy loam.	ML, CL-ML, CL	A-4	0	100	95-100	80-100	51-80	<25	NP-10
	11-80	Loam, clay loam, sandy clay loam.	CL	A-4, A-6, A-7	0	100	95-100	90-100	60-90	22-49	8-30
GoA---------- Goldsboro	0-14	Loamy sand-------	SM, SM-SC, SC	A-2, A-4, A-6	0	90-100	75-100	50-95	15-45	<25	NP-14
	14-80	Sandy clay loam, sandy loam, sandy clay.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	95-100	60-95	25-55	16-35	4-16
Gr---------- Grantham	0-13	Loam----------	ML, CL-ML	A-4	0	100	100	85-100	55-85	<30	NP-7
	13-80	Loam, clay loam, silty clay loam.	CL	A-4, A-6, A-7	0	100	100	90-100	60-95	22-49	8-30
Gt---------- Grifton	0-11	Fine sandy loam	SM, SM-SC	A-2, A-4	0	100	95-100	60-100	20-45	<30	NP-7
	11-60	Sandy loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	98-100	95-100	60-100	36-60	20-35	8-15
	60-80	Variable---------	SM, SM-SC	A-2, A-4	0	98-100	95-100	51-95	15-55	<35	NP-12
Ho---------- Hobonny	0-60	Muck----------	Pt	A-8	---	---	---	---	---	---	---
Jo---------- Johns	0-9	Fine sandy loam	SM, SM-SC, SC	A-2, A-4	---	100	95-100	70-95	20-49	<30	NP-10
	9-38	Sandy clay loam, sandy loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	---	100	95-100	60-90	30-55	20-35	4-5
	38-65	Sand, loamy sand	SM, SP-SM, SP	A-2, A-3	---	95-100	95-100	51-90	4-25	---	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
KaA---------- Kalmia	0-9	Loamy sand-------	SM, SM-SC, SC	A-2	0	100	95-100	50-75	15-35	---	NP
	9-38	Sandy clay loam	SC, SM-SC	A-2, A-4, A-6	0	100	95-100	70-100	30-49	20-35	4-15
	38-65	Loamy sand, sand	SM, SP-SM, SP	A-2, A-3	0	100	95-100	50-70	4-35	---	NP
KeA---------- Kenansville	0-27	Loamy fine sand	SM, SP-SM	A-1, A-2	0	100	95-100	45-99	10-25	---	NP
	27-36	Sandy loam, fine sandy loam.	SM, SC, SM-SC	A-2, A-4	0	100	95-100	50-99	20-40	<30	NP-10
	36-80	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-1, A-2, A-3	0	100	95-100	40-99	5-30	---	NP
La---------- Leaf	0-11	Silt loam--------	ML, CL	A-4, A-6	0	100	100	70-100	50-90	30-40	5-15
	11-90	Clay, clay loam, loam.	CL, CH	A-7	0	100	100	90-100	75-95	42-65	20-38
Le---------- Lenoir	0-9	Loam----------	ML, CL, CL-ML	A-4	0	100	100	85-95	60-85	<35	<10
	9-80	Clay, silty clay, clay loam.	CL, CH	A-6, A-7	0	100	100	85-95	55-95	30-55	11-35
Ln---------- Leon	0-15	Sand----------	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP
	15-30	Sand, fine sand	SM, SP-SM, SP	A-3, A-2-4	0	100	100	80-100	3-20	---	NP
	30-80	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	100	100	80-100	2-12	---	NP
Ly---------- Lynchburg	0-12	Fine sandy loam	SM, ML	A-2, A-4	0	92-100	90-100	75-100	25-65	<30	NP-7
	12-66	Sandy clay loam, sandy loam, clay loam.	SM-SC, SC, CL, CL-ML	A-2, A-4, A-6	0	92-100	90-100	70-100	25-67	15-40	4-18
	66-80	Variable---------	---	---	---	---	---	---	---	---	---
MaC---------- Marvyn	0-17	Loamy sand-------	SM	A-2, A-4	0	95-100	90-100	50-75	15-40	---	NP
	17-48	Sandy clay loam, sandy loam.	ML, SC, SM-SC, SM	A-4, A-5, A-2	0	95-100	90-100	60-80	30-55	24-45	3-15
	48-70	Loamy sand, sandy loam, sandy clay loam.	SM, SC, ML, CL	A-1, A-2, A-4	0	95-100	90-100	45-85	20-55	<40	NP-10
Me---------- Meggett	0-5	Loam----------	ML, CL-ML	A-4	0	100	90-100	85-100	51-75	<35	NP-10
	5-55	Clay, sandy clay, clay loam.	CH, MH, CL	A-6, A-7	0	100	90-100	85-100	51-90	30-60	20-30
	55-80	Sandy clay, sandy clay loam, sandy loam.	CL, SC, SM	A-4, A-6	0	90-100	65-100	50-100	40-60	<40	NP-25
Mk---------- Muckalee	0-8	Loam----------	ML, SC, SM, SM-SC	A-2, A-4	0	95-100	90-100	50-95	30-60	<30	NP-10
	8-65	Sandy loam, loamy sand.	SM	A-2, A-4	0	95-100	80-100	60-90	20-40	<20	NP-4
Mu---------- Murville	0-10	Fine sand--------	SP-SM, SM	A-2, A-3	0	100	100	85-100	5-30	---	NP
	10-50	Fine sand, sand, loamy fine sand.	SM, SP-SM	A-2	0	100	100	85-100	5-20	---	NP
	50-72	Fine sand, sand	SP-SM, SP	A-2, A-3	0	100	100	80-100	3-12	---	NP
Na---------- Nahunta	0-12	Loam----------	ML, CL-ML, CL	A-4	0	100	95-100	80-100	51-85	<25	NP-10
	12-80	Loam, clay loam, silty clay loam.	CL	A-4, A-6, A-7	0	100	95-100	90-100	60-95	22-49	8-30
NoB---------- Norfolk	0-14	Loamy sand-------	SM	A-2	0	95-100	92-100	50-91	13-30	<20	NP
	14-75	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	95-100	91-100	70-96	30-55	20-38	4-15
	75-85	Variable---------	---	---	---	---	---	---	---	---	---

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
On	0-15	Fine sandy loam	SM, ML, SC, CL	A-2, A-4	0	100	95-100	70-98	30-55	<25	NP-10
Onslow	15-52	Sandy clay loam, sandy loam, clay loam.	SM, CL, SM-SC, SC	A-2, A-4, A-6	0	100	95-100	60-95	30-55	<30	NP-14
	52-80	Variable	---	---	---	---	---	---	---	---	---
Pa	0-35	Loamy fine sand	SM	A-2	0	100	90-100	51-95	13-30	---	NP
Pactolus	35-80	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	90-100	51-95	5-30	---	NP
Pn	0-15	Loam	SM, SM-SC, CL, CL-ML	A-2, A-4	0	100	100	60-95	25-75	<35	NP-10
Pantego	15-80	Sandy clay loam, sandy loam, clay loam.	SC, CL, SM	A-4, A-6, A-2	0	100	95-100	80-100	30-80	20-40	11-24
Ra	0-16	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	50-85	25-56	<35	NP-10
Rains	16-55	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	98-100	65-98	30-70	18-40	4-18
	55-80	Sandy loam, sandy clay loam, sandy clay.	SM, SC, ML, CL	A-2, A-4, A-6	0	100	95-100	60-95	30-60	15-40	3-18
St	0-13	Loamy fine sand	SM	A-2	0	100	95-100	51-100	15-35	---	NP
Stallings	13-44	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	100	95-100	51-100	20-50	<25	NP-3
	44-80	Sandy loam, loamy sand, loamy fine sand.	SM, SP-SM, SM-SC	A-2, A-4	0	100	95-100	51-100	10-50	<25	NP-4
Sx	0-18	Fine sandy loam	SM, ML	A-2-4, A-4	0	100	100	85-100	20-60	<30	NP-7
Stockade	18-52	Sandy clay loam, fine sandy loam.	SC	A-4, A-6, A-2	0	100	100	90-100	28-45	28-40	9-18
	52-80	Variable	---	---	---	---	---	---	---	---	---
To	0-15	Fine sandy loam	SM	A-2, A-4	0	100	95-100	70-85	20-49	---	NP
Torhunta	15-47	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	100	95-100	70-85	20-40	---	NP
	47-72	Loamy sand, sand, sandy loam.	SM, SP-SM	A-2, A-3	0	100	95-100	65-85	5-25	---	NP
Wo	0-14	Fine sandy loam	SM	A-2, A-4	0	100	95-100	50-100	20-50	<25	NP-3
Woodington	14-74	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	100	95-100	50-100	20-50	<25	NP-3
	74-85	Sandy loam, clay loam, sandy clay loam.	SM, SP-SM	A-2, A-4	0	100	95-100	50-100	10-50	<25	NP-3

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
AnB	0-8	3-12	1.35-1.55	>20	0.05-0.10	4.5-6.0	Very low	0.10	5	>0.5
Alpin	8-42	3-7	1.40-1.55	>20	0.03-0.07	4.5-6.0	Very low	0.10		
	42-55	5-8	1.45-1.60	>20	0.06-0.09	4.5-6.0	Very low	0.10		
	55-80	3-7	1.40-1.55	>20	0.03-0.07	4.5-6.0	Very low	0.10		
AuB	0-27	2-10	1.60-1.70	>6.0	0.04-0.09	4.5-6.5	Low	0.10	5	.5-1
Autryville	27-42	10-25	1.40-1.60	2.0-6.0	0.08-0.13	4.5-5.5	Low	0.10		
	42-51	2-8	1.60-1.70	>6.0	0.03-0.08	4.5-5.5	Low	0.10		
	51-90	10-35	1.40-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.17		
Ba	0-14	10-35	1.30-1.50	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.17	---	4-15
Bayboro	14-80	35-60	1.20-1.40	0.06-0.2	0.14-0.18	4.5-5.5	Moderate	0.32		
CrB, CrC	0-10	6-20	1.30-1.55	0.6-2.0	0.12-0.18	4.5-6.5	Low	0.37	3	.5-2
Craven	10-58	35-60	1.30-1.45	0.06-0.2	0.12-0.15	3.6-5.5	Moderate	0.32		
	58-80	5-35	1.35-1.60	0.2-6.0	0.08-0.14	3.6-5.5	Low	0.32		
Ct	0-28	0.-0.	0.40-0.65	0.06-6.0	0.35-0.45	<4.5	Low	----	---	25-60
Croatan	28-38	8-20	1.40-1.60	0.2-6.0	0.10-0.15	3.6-6.5	Low	----		
	38-60	10-35	1.40-1.60	0.2-2.0	0.12-0.20	3.6-6.5	Low	----		
	60-80	---	---	---	---	---	---	----		
ExA	0-11	6-18	1.30-1.50	2.0-6.0	0.15-0.20	4.5-6.0	Low	0.37	5	.5-2
Exum	11-80	18-35	1.30-1.40	0.2-0.6	0.15-0.20	4.5-5.5	Low	0.37		
GoA	0-14	5-15	1.4-1.6	2.0-6.0	0.08-0.12	4.5-6.0	Low	0.20	5	.5-2
Goldsboro	14-80	18-25	1.3-1.5	0.6-2.0	0.11-0.15	4.5-5.5	Low	0.24		
Gr	0-13	6-18	1.30-1.50	2.0-6.0	0.13-0.20	4.5-5.5	Low	0.37	4	2-4
Grantham	13-80	18-35	1.30-1.40	0.2-0.6	0.15-0.20	3.6-5.5	Low	0.43		
Gt	0-11	7-18	1.45-1.65	2.0-6.0	0.10-0.14	5.1-6.5	Low	0.17	5	2-4
Grifton	11-60	18-35	1.35-1.45	0.6-2.0	0.12-0.17	5.1-6.5	Low	0.24		
	60-80	---	---	---	---	---	---	----		
Ho	0-60	---	0.40-0.70	0.6-2.0	0.20-0.25	3.6-5.5	Low	0.15	---	25-60
Hobonny										
Jo	0-9	5-15	1.45-1.65	2.0-6.0	0.10-0.15	4.5-5.5	Low	0.20	---	.5-2
Johns	9-38	18-35	1.40-1.60	0.6-2.0	0.12-0.15	4.5-5.5	Low	0.24		
	38-65	2-10	1.60-1.75	6.0-20	0.03-0.06	4.5-5.5	Low	0.10		
KaA	0-9	4-12	1.60-1.75	2.0-6.0	0.06-0.10	4.5-6.0	Low	0.20	4	.5-2
Kalmia	9-38	18-35	1.4-1.60	0.6-2.0	0.12-0.16	4.5-5.5	Low	0.24		
	38-65	2-10	1.60-1.75	6.0-20	0.03-0.06	4.5-5.5	Low	0.10		
KeA	0-27	3-10	1.5-1.7	6.0-20	0.04-0.10	4.5-6.0	Low	0.15	5	.5-2
Kenansville	27-36	5-18	1.3-1.5	2.0-6.0	0.10-0.14	4.5-6.0	Low	0.15		
	36-80	1-10	1.5-1.7	6.0-20	<0.05	4.5-6.0	Low	0.10		
La	0-11	12-25	1.30-1.50	0.06-0.2	0.20-0.22	4.5-5.5	Low	0.32	4	1-3
Leaf	11-90	35-60	1.50-1.60	<0.06	0.18-0.21	4.5-5.5	High	0.32		
Le	0-9	6-20	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.37	4	2-4
Lenoir	9-80	35-60	1.20-1.35	0.06-0.2	0.13-0.15	4.5-5.5	Moderate	0.32		
Ln	0-15	1-6	1.40-1.65	6.0-20	0.02-0.05	3.6-5.5	Low	0.20	5	.5-1
Leon	15-30	2-8	1.50-1.70	0.6-6.0	0.05-0.10	3.6-5.5	Low	0.20		
	30-80	1-6	1.40-1.65	>20	0.02-0.05	3.6-5.5	Low	0.17		
Ly	0-12	5-20	1.30-1.60	2.0-6.0	0.09-0.13	3.6-5.5	Low	0.20	4	.5-5
Lynchburg	12-66	18-35	1.30-1.50	0.6-2.0	0.12-0.16	3.6-5.5	Low	0.20		
	66-80	---	---	---	---	---	---	----		

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm3	In/hr	In/in	pH				Pct
MaC	0-17	2-15	---	2.0-6.0	0.07-0.12	4.5-6.0	Low	0.24	3	<2
Marvyn	17-48	18-35	---	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.32		
	48-70	10-30	---	0.2-2.0	0.07-0.14	4.5-6.0	Low	0.32		
Me	0-5	15-25	---	0.6-2.0	0.15-0.20	4.5-6.5	Low	0.32	4	2-8
Meggett	5-55	40-60	---	0.06-0.2	0.13-0.18	5.1-8.4	High	0.32		
	55-80	25-50	---	0.2-2.0	0.12-0.16	6.1-8.4	Moderate	0.28		
Mk	0-8	10-25	---	0.6-2.0	0.09-0.15	5.1-6.5	Low	0.20	4	---
Muckalee	8-65	5-20	---	0.6-2.0	0.08-0.12	5.6-7.3	Low	0.20		
Mu	0-10	2-8	1.60-1.75	6.0-20	0.05-0.09	3.6-5.5	Low	0.10	5	2-4
Murville	10-50	2-8	1.60-1.75	2.0-6.0	0.05-0.09	3.6-5.5	Low	0.10		
	50-72	2-8	1.60-1.75	6.0-20	0.04-0.07	3.6-5.5	Low	0.10		
Na	0-12	6-18	1.30-1.50	2.0-6.0	0.15-0.20	4.5-6.0	Low	0.43	4	2-4
Nahunta	12-80	18-35	1.30-1.40	0.2-0.6	0.15-0.20	3.6-5.5	Low	0.43		
NoB	0-14	2-8	1.55-1.75	6.0-20	0.06-0.11	4.5-6.0	Low	0.17	5	.5-2
Norfolk	14-75	18-35	1.35-1.45	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.24		
	75-85	---	---	---	---	---	---	---		
On	0-15	5-15	1.45-1.65	2.0-6.0	0.11-0.15	3.6-5.5	Low	0.17	4	.5-2
Onslow	15-52	15-35	1.30-1.50	0.6-2.0	0.12-0.17	3.6-5.5	Low	0.24		
	52-80	---	---	---	---	---	---	---		
Pa	0-35	2-12	1.60-1.75	6.0-20	0.05-0.10	4.5-6.0	Low	0.10	---	.5-2
Pactolus	35-80	2-12	1.60-1.75	6.0-20	0.03-0.07	4.5-5.5	Low	0.10		
Pn	0-15	5-15	1.40-1.60	2.0-6.0	0.10-0.20	3.6-5.5	Low	0.15	---	4-15
Pantego	15-80	18-35	1.30-1.40	0.06-2.0	0.12-0.20	3.6-5.5	Low	0.28		
Ra	0-16	5-20	1.30-1.60	2.0-6.0	0.08-0.12	4.5-6.5	Low	0.17	5	1-6
Rains	16-55	18-35	1.30-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.24		
	55-80	15-45	1.30-1.60	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.28		
St	0-13	2-10	1.5-1.6	6.0-20	0.06-0.11	3.6-5.5	Low	0.10	5	1-4
Stallings	13-44	5-18	1.4-1.6	2.0-6.0	0.10-0.15	3.6-5.5	Low	0.17		
	44-80	2-18	1.5-1.6	2.0-20	0.06-0.15	3.6-5.5	Low	0.17		
Sx	0-18	10-15	1.60-1.70	2.0-6.0	0.15-0.20	5.1-6.5	Low	0.20	5	6-15
Stockade	18-52	18-30	1.60-1.70	0.6-6.0	0.12-0.17	5.6-8.4	Low	0.28		
	52-80	---	---	---	---	---	---	---		
To	0-15	5-18	1.35-1.65	2.0-6.0	0.10-0.15	3.6-5.5	Low	0.15	---	3-18
Torhunta	15-47	5-18	1.35-1.60	2.0-6.0	0.10-0.15	3.6-5.5	Low	0.15		
	47-72	2-18	1.45-1.65	6.0-20	<0.05	3.6-6.5	Low	0.10		
Wo	0-14	5-18	1.45-1.65	2.0-6.0	0.10-0.15	3.6-5.5	Low	0.15	---	2-4
Woodington	14-74	5-18	1.45-1.65	2.0-6.0	0.10-0.15	3.6-5.5	Low	0.20		
	74-85	3-18	1.45-1.65	2.0-20	0.06-0.15	3.6-5.5	Low	0.10		

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
AnB---- Alpin	A	None----	---	---	>6.0	---	---	Low----	High.
AuB---- Autryville	A	None----	---	---	4.0-6.0	Apparent	Jan-Apr	Low----	High.
Ba---- Bayboro	D	None----	---	---	0-1.0	Apparent	Dec-May	High----	High.
CrB, CrC---- Craven	C	None----	---	---	2.0-3.0	Apparent	Dec-Apr	High----	High.
Ct---- Croatan	D	Rare----	---	---	0-1.0	Apparent	Dec-May	High----	High.
ExA---- Exum	C	None----	---	---	2.0-3.0	Apparent	Dec-Apr	Moderate	High.
GoA---- Goldsboro	B	None----	---	---	2.0-3.0	Apparent	Dec-Apr	Moderate	High.
Gr---- Grantham	D	None----	---	---	0-1.0	Apparent	Dec-May	High----	High.
Gt---- Grifton	D	None----	---	---	0.5-1.0	Apparent	Dec-May	High----	Low.
Ho*---- Hobonny	D	Frequent----	Very long	Jan-Dec	+1-0	Apparent	Jan-Dec	High----	High.
Jo---- Johns	C	None----	---	---	1.5-3.0	Apparent	Dec-Apr	Moderate	High.
KaA---- Kalmia	B	None----	---	---	>6.0	---	---	Moderate	Moderate.
KeA---- Kenansville	A	None----	---	---	>6.0	---	---	Low----	High.
La---- Leaf	D	None----	---	---	0.5-1.5	Apparent	Jan-Apr	High----	Moderate.
Le---- Lenoir	D	None----	---	---	1.0-2.5	Apparent	Dec-May	High----	High.
Ln---- Leon	A/D	None----	---	---	0-1.0	Apparent	Jun-Feb	High----	High.
Ly---- Lynchburg	B/D	None----	---	---	0.5-1.5	Apparent	Nov-Apr	High----	High.
MaC---- Marvyn	B	None----	---	---	>6.0	---	---	Moderate	High.
Me---- Meggett	D	None----	---	---	0-1.0	Apparent	Nov-Apr	High----	Moderate.
Mk---- Muckalee	D	Frequent----	Brief----	Nov-Apr	0.5-1.5	Apparent	Dec-Mar	High----	Moderate.
Mu---- Murville	D	None----	---	---	0-1.0	Apparent	Nov-May	High----	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Na---------- Nahunta	C	None--------	---	---	1.0-2.5	Apparent	Dec-May	High-----	High.
NoB---------- Norfolk	B	None--------	---	---	4.0-6.0	Apparent	Jan-Mar	Moderate	High.
On---------- Onslow	B	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	High-----	High.
Pa---------- Pactolus	C	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	Low------	High.
Pn---------- Pantego	D	None--------	---	---	0-1.5	Apparent	Dec-May	High-----	High.
Ra---------- Rains	B/D	None--------	---	---	0-1.0	Apparent	Nov-Apr	High-----	High.
St---------- Stallings	C	None--------	---	---	1.0-2.5	Apparent	Dec-Apr	High-----	High.
Sx---------- Stockade	B/D	None--------	---	---	0-1.0	Apparent	Jun-Mar	High-----	Moderate.
To---------- Torhunta	C	None--------	---	---	0.5-1.5	Apparent	Dec-May	High-----	High.
Wo---------- Woodington	D	None--------	---	---	0.5-1.0	Apparent	Dec-May	High-----	High.

* In the "High water table--Depth" column, a plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

TABLE 17.--ENGINEERING TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution							Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve--				Percentage smaller than--						
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture
										Pct		Lb/Ft3	Pct
Alpin fine sand:[1] (S78NC-103-013)													
Ap------- 0 to 8	A-2-4(00)	SM	100	100	99	13	4	2	2	--	NP	94	18
A2&B2t---42 to 55	A-2-4(00)	SM	100	100	100	16	9	8	6	--	NP	104	15
C--------55 to 80	A-3 (00)	SP-SM	100	100	100	7	4	4	3	--	NP	98	16
Grantham loam:[2] (S78NC-103-009)													
Ap------- 0 to 9	A-4 (02)	ML	100	100	100	83	28	12	7	27	3	103	16
B22tg----17 to 47	A-6 (12)	CL	100	100	100	90	40	28	24	33	14	112	15
B3g------68 to 80	A-7-6(28)	CL	100	100	99	91	49	39	34	47	29	105	18
Grifton fine sandy loam:[3] (S78NC-103-008)													
Ap------- 0 to 8	A-4 (00)	SM	100	100	98	41	21	6	3	--	NP	111	12
B2tg-----19 to 50	A-6 (03)	CL	100	100	99	56	40	25	19	23	11	123	11
IICg-----60 to 80	A-6 (03)	CL	100	100	88	51	33	22	15	32	12	109	17
Woodington fine sandy loam:[4] (S78NC-103-033)													
Ap------- 0 to 6	A-4 (00)	SM	100	100	98	42	17	5	3	--	NP	97	18
B21tg----19 to 36	A-4 (00)	SM	100	100	98	42	22	12	9	--	NP	122	9

[1]Alpin fine sand:
0.4 mile northeast of Trenton, 0.2 mile southeast of intersection of State Road 1001 and State Road 1343, east side of State Road 1343.

[2]Grantham loam:
1.1 miles south of Pollocksville, 0.7 mile south of intersection of N.C. Highway 58 and U.S. Highway 17, 50 feet east of U.S. Highway 17.

[3]Grifton fine sandy loam:
2.6 miles west of Phillips Crossroads, 50 feet southeast of intersection of State Road 1159 and State Road 1158, 50 feet south of State Road 1158.

[4]Woodington fine sandy loam:
0.9 mile south of Hargetts Crossroads, 0.1 mile east of intersection of U.S. Highway 258 and field road, 10 feet south of field road.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Alpin	Thermic, coated Typic Quartzipsamments
Autryville	Loamy, siliceous, thermic Arenic Paleudults
Bayboro	Clayey, mixed, thermic Umbric Paleaquults
Craven	Clayey, mixed, thermic Aquic Hapludults
Croatan	Loamy, siliceous, dysic, thermic Terric Medisaprists
Exum	Fine-silty, siliceous, thermic Aquic Paleudults
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Grantham	Fine-silty, siliceous, thermic Typic Paleaquults
Grifton	Fine-loamy, siliceous, thermic Typic Ochraqualfs
Hobonny	Euic, thermic Typic Medisaprists
Johns	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Aquic Hapludults
Kalmia	Fine-loamy over sandy or sandy-skeletal, siliceous, thermic Typic Hapludults
Kenansville	Loamy, siliceous, thermic Arenic Hapludults
Leaf	Clayey, mixed, thermic Typic Albaquults
Lenoir	Clayey, mixed, thermic Aeric Paleaquults
Leon	Sandy, siliceous, thermic Aeric Haplaquods
Lynchburg	Fine-loamy, siliceous, thermic Aeric Paleaquults
Marvyn	Fine-loamy, siliceous, thermic Typic Hapludults
Meggett	Fine, mixed, thermic Typic Albaqualfs
Muckalee	Coarse-loamy, siliceous, nonacid, thermic Typic Fluvaquents
Murville	Sandy, siliceous, thermic Typic Haplaquods
Nahunta	Fine-silty, siliceous, thermic Aeric Paleaquults
Norfolk	Fine-loamy, siliceous, thermic Typic Paleudults
Onslow	Fine-loamy, siliceous, thermic Spodic Paleudults
Pactolus	Thermic, coated Aquic Quartzipsamments
Pantego	Fine-loamy, siliceous, thermic Umbric Paleaquults
Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Stallings	Coarse-loamy, siliceous, thermic Aeric Paleaquults
*Stockade	Fine-loamy, mixed, thermic Typic Umbraqualfs
Torhunta	Coarse-loamy, siliceous, acid, thermic Typic Humaquepts
Woodington	Coarse-loamy, siliceous, thermic Typic Paleaquults

* The soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

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